CONSTRUCTION NEWS

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CONSTRUCTION NEWS.

PLANS AND SPECIFICATIONS ON FILE.

(* *denotes that this work is advertised in Engineering News.*)

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RAILWAYS.

ATCHISON, TOPEKA & SANTA FE.—The contract for building the Santa Fe extension from Center, Tex., to connect with the Texas & Gulf Ry., has been awarded to JOHN SCOTT & SONS, Times Bldg., St. Louis. This extension will be 21 miles in length, and will connect with the Texas & Gulf Ry. at Zuber, Tex., a point some nine or ten miles north of Timpson. It was at first intended to build from Center, the present northern terminus of the Santa Fe lines in that section of the state, to Timpson, and an amendment to the charter of the Santa Fe was filed to that effect. It was decided later, however, to build to Zuber instead of to Timpson, and another amendment to the charter was filed calling for this change.

BEAVER VALLEY & NORTHWESTERN.—Company has reorganized by electing J. W. Webb, Pres.; J. F. Laughrin, Treas., and W. A. Liporant and A. D. Green, Trustees, with headquarters at Beaver, Okla. As noted on Nov. 14, "survey is being made from Beaver, Okla., westward. This proposed line will extend from Oklahoma City, Okla., to La Junta, Colo., 400 miles, via Woodward and Beaver, Okla., and Richfield, Kan. The first section of the line, from Beaver west to a connection with the Chicago, Rock Island & Pacific Ry., is to be built at once, stock being subscribed by the farmers and business men along the line. The company will do its own construction work. Curves will be light; 60-lb. rails will be used."

CANADIAN PACIFIC. — Company may double track the line between Smith's Falls and Toronto, Ont. It is expected the work will be completed by the end of next year, giving a double track between Toronto and Montreal.

CENTRAL OF LOUISIANA.—Construction of this railway may begin next spring, it is stated. The line was located from Leesville to New Orleans, La., 220 miles in 1906, and about 40 miles of grading was completed near New Iberia, La. William H. Bush is Ch. Engr., New Iberia, La.

CENTRAL ONTARIO.—We are officially advised that contracts probably will be let in the near future for building the extension from Maynooth and Lake St. Peter to Whitney, Ont., 27¼ miles. Between Maynooth and Lake St. Peter eight miles of grading ar ecompleted and two miles of track laid. From Lake St. Peter to Whitney some clearing has been done. Surveys have been made and practically all right-of-way secured. S. J. Ritchie is Pres., Akron, Ohio; John D. Evans is Ch. Engr., Trenton, Ont. Company now operates 116 miles of line, between Picton and Bancroft, Ont.

CHICAGO, JOLIET & CENTRAL ILLINOIS.—This company has been incorporated with principal offices in Chicago, and with a capital stock of $42,500, nominally. It is proposed to construct the railroad from Chicago southwesterly through Lyons, in Cook County; Downer's Grove, Du Page County; Du Page, in Will County; and thence south through Lockport and Will County and to other points in the counties of Cook, Du Page, Will, Bureau, Peoria, Kendall, Grundy, La Salle, Putnam, Marshall, McLean and Livingston. The incorporators and first board of directors are Josiah Burnham, 163 East Rand St., Chicago; Hugo Deleob, Geo. L. Turnbull and L. B. Strickler.

CUMBERLAND RIVER & NASHVILLE.—S. A. Woodward, Pres., Cincinnati, Ohio, states that twelve miles have been graded on the line between New Burnside, on the Cincinnati, New Orleans & Texas Pacific Ry., and Monticello, Ky., 20 miles. The line is planned to extend from Corbin, Ky., southwesterly to the Kentucky-Tennessee state line, 100 miles, and thence eventually to Nashville. It is not announced when tracklaying will begin. Noted on Nov. 21.

DARDANELLE, OLA & SOUTHERN.—An extension from Dardanelle to Paris, Ark., 32 miles, and possibly to Fort Smith, Ark., 52 miles from Paris, is planned for 1908. The road is now in operation from Dardanelle to Ola, Ark., 15 miles, making connection with the Chicago, Rock Island & Pacific Ry. at Ola. J. B. Crownover is Vice-Pres., Dardanelle, Ark.

EASTERN BRITISH COLUMBIA.—Application will be made at the next session of the British Columbia Legislature for an act to incorporate this line with powers to build a standard-gage railroad from a point on the south fork of Michel Creek in a southeasterly direction to a point on the International boundary in the Flathead Valley, a distance of 51 miles more or less. Harvey, McCarter & Macdonald, Cranbrook, B. C., are attorneys for the applicants.

JEFFERSON CITY, ALBUQUERQUE & SAN DIEGO VALLEY.—We are officially informed that no effort is being made at present time to build this railway owing to financial conditions. As previously noted, this company has been chartered in Oklahoma, with a capital of $7,000,000, to build a railroad from Springfield or Jefferson City, Mo., through Missouri, Kansas, Oklahoma, New Mexico and Arizona, to San Diego, Cal., about 1,600 miles. Headquarters will be at Carthage, Okla. The incorporators are: J. H. Langston and O. S. Jent of Guymon, Okla.; J. H. Harris, of Carthage, Okla.; W. F. Bort, of Wichita, Kan.; and C. R. Wright, of Liberal, Kan.

LAKE SUPERIOR & SOUTHERN.—The L. S. & S. Ry. Co., according to the Milwaukee "Sentinel," proposes to build 300 miles of railroad from Madison, Wis., north to Champion, Marquette county, Mich., thence northwest to Huron Bay, Baraga County, Lake Superior. "Much preliminary work has already been done. The company was organized about two years ago, when a few Marquette County men became interested in the project. They have since withdrawn, however, and the company is now in control of Wisconsin capital. M. C. Philips, of Oshkosh, is the Pres. It is the understanding that it is intended to issue $300,000 of first mortgage bonds as soon as pending negotiations for their disposition are completed, and to proceed at once with the construction of the line from Huron bay to Champion, where connection will be made with the Chicago & North-Western, the Duluth, South Shore & Atlantic, and Chicago, Milwaukee & St. Paul railway systems. The distance from Huron bay is 35 miles. The grading of this stretch of line is already completed, the route being that of the old Huron Bay railroad, built and abandoned many years ago, and many of the bridges and culverts formerly in use are in serviceable condition. The cost of this work was approximately $500,000. The Huron Bay-Champion route traverses a well timbered country, in which the logging traffic doubtless would be heavy. The division north from Madison will cross the Menominee iron range as projected, and it is proposed to build a branch from Champion east to Ishpeming and Negaunee, in the heart of the Marquette iron range."

MEMPHIS, PARIS & GULF—This line is now completed from Nashville, Ark. to Ashdown, 28 miles. It will be extended next summer about ten miles northward, and also southward to Richmond, Ark., about eight miles. The line is projected to reach Paris, Tex., and also Memphis, Tenn., via Hot Springs, Ark.

MEXICO.—John Cooper, of Mexico City, Mex., has asked for a concession to build a 700-mile railway from Comacho in the northern part of the state of Zacatecas on the main line of the Mexican Central Ry. to Bonanzo. The road will traverse a rich agricultural district.

MISSISSIPPI.—Eastman, Gardiner & Co., of Laurel, Miss., are actively making preparations to begin work on a railroad from Mize, Smith County, on the Gulf & Ship Island Railroad, to Morton Scott County, on the Alabama & Vicksburg R. R., about 41 miles long.

NEUCES VALLEY, RIO GRANDE & MEXICO.—This company has been reorganized and the following officers elected: Asher Richardson, Pres., Oak Grove, Tex.; S. T. Bivins, Vice-Pres., Pearsall, Tex.; Frank Fanning, Second Vice-Pres.; S. D. Chamberlain, Third Vice-Pres. and Gen. Mgr.; Felix Shaw, Treas.; and T. E. George, Secy., San Antonio, Tex. The line of this proposed road is from Carrizo Springs to Artesia, Tex., 40 miles, and from Artesia to Aransas Pass.

OMAHA, NEWPORT & NORTHERN. — We are officially informed that this project is at present held in abeyance. This company, as previously noted, was organized in South Dakota, with a capital stock of $8,000,000, to build a railway from Omaha, Neb., to a point in central South Dakota. Clarence A. Miller, of Minneapolis, Minn.; T. W. Goodner and M. P. Goodner, of Pierre, S. Dak.; Ephraim Banning, Pierson M. Banning, Thomas C. MacPhillon and Oscar W. Boyd, of Chicago, are incorporators. The proposed line is to traverse the counties of Douglas, Washington, Dodge, Colfax, Platte, Bowen, Wheeler, Holt and Rock in Nebraska.

PORT SIMPSON & SKEENA RIVER.—Under this name a company is being formed by Col. C. J. Prior, of Victoria, B. C., and associates to build a line from Port Simpson, B. C., east to a point on the Skeena River, about 200 miles.

TERMINAL R. R. ASSOCIATION.—It is proposed to make extensive improvements, although it is probable that nothing will be done until next spring or summer. This Association controls the connecting freight and passenger line between the Missouri Pacific; Missouri, Kansas & Texas and St. Louis, Iron Mountain & Southern Rys.; Frisco System; St. Louis, Kansas City & Colorado R. R.; Chicago, Burlington & Quincy Ry. and Wabash R. R. in St. Louis, and the Cleveland, Cincinnati, Chicago & St. Louis; Chicago & Alton; Chicago, Burlington & Quincy; Chicago, Peoria & St. Louis; Louisville & Nashville; Southern; Mobile & Ohio; Baltimore & Ohio Southwestern; Illinois Central; Toledo, St. Louis & Western; Vandalia Line; Wabash; St. Louis, Troy & Eastern; St. Louis & Belleville Electric; St. Louis Valley and St. Louis & O'Fallon R. R. in East St. Louis. Mileage, four miles. W. S. McChesney is Pres. and Gen. Mgr., St. Louis, Mo.

TEXAS & NEW MEXICO.—M. J. Healy, Pres. and Gen. Mgr., McKinney, Tex., writes us that the company "desires to open correspondence with a reliable contractor or party that will form aid in financing this project." The line will extend from McKinney to Western New Mexico, about 456 miles in length. Surveys for 32 miles are made and right-of-way for ten miles has been secured. As previously noted, right-of-way and terminal grounds are assured and about $20,000 of the stock will be subscribed by local parties. Valuable coal lands along the line are offered to the promoters. The road will traverse a territory greatly in need of railway facilities, although it is intended principally for coal and freight traffic.

ELECTRIC RAILWAYS.

BOSTON, MASS.—The Boston & Providence Interurban Electric Ry. Co. has been authorized by the Massachusetts State Board of Railroad Commissioners to build an electric railway from Forest Hill, the terminus of the Boston end of the line, through Hyde Park, Dedham, Westwood, Norwood, Canton, Sharon, Foxboro, Mansfield, Attleboro and Seekonk to the State line.

CANANDAIGUA, N. Y.—Subscriptions have been raised for construction of the Canandaigua Southern Elec. Ry. It is to extend

from Atlanta, Steuben County, to Canandaigua, Ontario County, and on the west side of Canandaigua Lake. The officers are as follows: Geo. H. Switzer, Bath, Pres.; E. G. Hayes, Canandaigua, Vice-Pres.; H. C. Hatch, Atlanta, Secy., and D. H. Maxfield, Naples, Treas.

BEAVER FALLS, PA.—The Beaver Falls & Koppel and Beaver & Lawrence Electric Street Railway Companies have been chartered in the Beaver County Courts. The Beaver & Lawrence line will run from North Sewickley, on the boundary between Beaver and Lawrence Counties, as far as Beaver Falls. The other system will extend from Beaver Falls to Koppel, a distance of about ten miles. The incorporators are T. P. Simpson, S. L. Tone, C. W. Gibbs, W. J. Horgan and B. S. Johns.

FRACKVILLE, PA.—It is reported that application for a further extension of six months for the Eastern Pennsylvania Railways Co. to commence the construction of the new electric railway from Pottsville to Shenandoah has been refused and that the Frackville Council has caused to be forfeited the bonds of $1,250 of the company for which the Schuylkill Trust Co. was security.

GREENVILLE, S. C.—The Greenville Interurban Co. has begun a survey of its proposed electric railway from Williamston to Greenville. Rights-of-way for another line, which it proposes to build from Greenville to Spartanburg, is now being secured. At a recent meeting of the stockholders, several new directors were added to the board, and changes were made in the officers. H. H. Prince resigned as President and John C. Carey was elected to succeed Mr. Prince. A. A. Gates was elected Vice-Pres. and C. C. Good Secy. and Treas. H. H. Prince was elected Gen. Mgr. A. L. Scott, of the engineering firm of Lockwood, Greene & Co., 93 Federal St., Boston, was added to the board of directors with Geo. E. Coughlin, of Anderson, S. C. It is announced that the company has completed all necessary arrangements for financing the enterprise.

GENEVA, ALA.—City has subscribed to the electric railway projected by Richard Tillis, of Montomery, who has announced that he will soon begin construction of the proposed electric railway from Geneva to Dothan, Ala., via Hartford and Slocomb. When it is completed the line will be extended to Union Springs, Troy, Eufaula, Clayton and Montgomery. First section is to be about 40 miles long and will cost about $500,000. Noted on Oct. 3.

MINDEN, LA.—H. A. Davis, Secy. of the Minden Progressive League, who, with J. B. Story, applied for a street-railway franchise for the Minden Traction Co., states that the company will be chartered when the city grants a franchise, which is expected in the near future. It is proposed to build a motor-car line about four miles long. Noted on Dec. 19.

DEFIANCE, OHIO.—The Defiance, Paulding & Ft. Wayne Electric Ry. Co. has applied for a franchise to operate its line through Defiance. The road will be built from Detroit to Ft. Wayne, serving the towns of Wauseon, Lyons, Defiance, Paulding and New Haven, Ind. Eight miles of the old Wabash canal between Defiance and Ft. Wayne recently was purchased by the company. K. V. Haymaker, Defiance, Ohio, is interested. Noted on Nov. 21.

MAGNETIC SPRINGS, OHIO.—Track-laying has been completed between Magnetic Springs and Richwood, Ohio, 5½ miles, by the Columbus, Magnetic Springs & Northern Ry. Co. When completed, this railway will be 20 miles long, connecting Delaware Magnetic Springs and Richwood. H. E. Buck, Delaware, Ohio, is Gen. Mgr., and Pur. Agt.

YOUNGSTOWN, OHIO.—The Meadville & Conneaut Lake & Linesville Trolley Co. may build between Greenville and Linesville, a distance of 21 miles, if the Mahoning & Shenango Railway & Light Co. will extend its line from Sharpsville to Greenville, eleven miles. This would give a through line to Greenville and Meadville, as well as to Erie, Jefferson and Cleveland, by way of Painesville. H. L. Kellenbaugh is Supt. Construction, Youngstown.

DECATUR, IND.—The Fort Wayne and Springfield Ry. Co. has authorized construction of extension to Berne from Decatur. A. W. Fishbaugh is Ch. Engr., Celina, Ohio. Noted on Nov. 21.

GRAND RAPIDS, MICH.—We are officially informed that owing to financial conditions the date for letting contracts is uncertain for construction of the Grand Rapids Electric Ry. Co.'s line between Grand Rapids and Saginaw and Bay City. As noted on Oct. 31, this line will be 157 miles long, passing through Greenville, Langston, Stanton and Alma. Surveys have been finished and right-of-way and capital secured. The work will be largely gravel and sand loam. Both electricity and steam will be used on this road. J. W. Boynton, Grand Rapids, is Pres. and George W. Doane, Ch. Engr. C. J. Post is Secy., 267 Terrace Ave., Grand Rapids.

RED BUD, ILL.—The Red Bud Interurban Railroad Co. has been formed to build an interurban electric railway from Red Bud to Belleville, Ill. Conrad Becker, Herman Schreiber, Dr. C. C. Smith, of Red Bud, Ill., and John Keller, of Hecker, Ill., are interested.

EAST ST. LOUIS, ILL.—The Illinois & Indiana Electric R. R. Co. is stated to have secured an extension of three years' time in which to complete its road, conditional upon filing a bond for $10,000. A year ago this company asked an extension of one year, which was granted, and a bond for $5,000 was taken.

CHICAGO, ILL.—The Chicago, Fox Lake & Lake Geneva R. R. Co. probably will begin construction work on its line next spring. The railway, which will be operated by electricity, will be about 67 miles long, and will connect Chicago with Fox Lake district and Lake Geneva. The total capital stock of the company is $3,500,000, of which $2,000,000 is authorized and $1,500,000 issued. The officers are as follows: Geo. M. Seward, Pres.; M. B. Louis, Vice-Pres. and Gen. Mgr.; S. S. Mallette, Secy. and Treas.; E. J. Hall is Ch. Engr. The offices of the company are located at 108 La Salle St., Chicago, Ill. Noted on Nov. 7.

APPLETON, WIS.—John M. Seaman, of Sheboygan, Pres. of the Milwaukee & Fox River Valley Interurban Co., writes us that company is raising funds for this railway. Surveys for the new interurban line from Fond du Lac around the east shore of Lake Winnebago, through Taycheedah, Peebles, Calumet Harbor, Calumetville, Brothertown, Stockbridge, Sherwood, and Chilton to Appleton, have been completed. Construction work will be begun early next spring. Company is not ready to let contracts. The cost of the new line will be $600,000. Robert Vrosby and Dr. A. J. Pullen, of Fond du Lac, are interested. Noted on Nov. 7.

ELDORADO SPRINGS, MO.—The Eldorado Springs, Tiffin, Monegaw Springs & Lowry City R. R. Co., which was recently organized to build an electric railway connecting Eldorado, Tiffin and Monegaw Springs, Mo., has done only preliminary work. Surveys have not yet been made. J. S. Harrison is Secy. and Gen. Mgr., Tiffin, Mo. Noted on Nov. 28.

BARTLESVILLE, OKLA.—W. G. Thummel, Ch. Engr. of the Bartlesville Interurban Ry. Co., states that about 50 per cent of the grading on this proposed interurban line, which will connect Bartlesville and Dewey, has been completed and that work on the two steel bridges has been started. The MISSOURI VALLEY BRIDGE & IRON CO., Leavenworth, Kan., has secured the contract for these bridges, as well as for all the pile structures on the line. Bids for tracklaying, rails, ties, etc., will be asked for in the near future.

WALLA WALLA, WASH.—The Washington-Oregon Traction Co., through its attorney, has applied to the City Council for a franchise for the construction of its lines through certain streets of the city. The company agrees to begin construction work within four months, providing it negotiates the sale of the company bonds. The company agrees to deposit $2,000 with the city for the fulfillment of the contract and agrees to have the road in operation within three years. Noted fully on Nov. 21.

SEATTLE, WASH.—Harry C. Todd, Secy. of the Seattle-Everett Interurban Ry., states that this company has laid 2¼ miles of track this year, from Ballinger to Hall Lake, Wash. The remainder of the line, from Hall Lake to Everett, Wash., is to be completed in 1908.

PORTLAND, ORE.—The Portland, Eugene & Eastern Railway Co. has been incorporated with a nominal capital of $1,000,000, for the purpose of building an electric railway from Portland to Salem, Eugene, Yaquina, Prineville and Ontario, with branches to numerous towns. The total mileage contemplated is more than 800 miles. It is proposed to develop from the Mackenzie, the Santiam and the Deschutes Rivers and streams in central Oregon the power necessary for operating the system planned. The incorporators are J. O. Storey, J. C. Bracher, Geo. Bracher, A. Welch, E. M. Hall and John McNary, of Portland. According to the incorporation papers the following lines of electric road will be built: From Portland to Salem, thence to Eugene, from which point they will branch out in several directions. A line from Eugene via Springfield and the Mackenzie River Valley will extend to Prineville and thence across the State to Ontario. Another line from Eugene will tap Yaquina Bay points, and lines will also connect Eugene with Florence, Cottage Grove, Corvallis, Wendling, Mehana and Dallas, passing through Lane, Polk and Lincoln Counties.

CHICO, CAL.—We are officially informed that the plan to electrify the Butte County R. R. is only a tentative project. D. H. Brammer and others, of Orloff, Cal., have taken preliminary steps to induce the Diamond Match Co. to electrify the railroad from Chico to Paradise, 14 miles. F. G. Somner is Ch. Engr., Chico. The Butte County R. R. is now in operation between Chico and Stirling City, 31 miles.

BOISE, IDAHO.—The Idaho & Nevada Southern Railway Co. has been incorporated to build an electric railway to connect Jerome and Wells, Nev., a distance of 127 miles. It is stated that the line has been surveyed and located from Hollister to Wells and complete estimates made. The capital stock, which was placed at $500,000, will be increased later. The directors of the company and officers are H. L. Hollister, Pres.; I. B. Perrine, Vice-Pres.; R. M. McCollum, Secy.-Treas.; C. B. Hurtt and George Sprague.

KEMPTVILLE, ONT.—This municipality is considering the advisability of applying for a charter to construct a railway from Kemptville Junction or Mountain across the country to the Grand Trunk line at or near South Indian.

COBALT, ONT.—We are officially informed that J. W. Fitzpatrick, 404 Lawner Ave. East, Ottawa, Ont., is the chief promoter of the Nipissing Central Ry. Co., which plans to build from Cobalt to New Lispenard, about twelve miles. Company is not fully organized yet but is securing franchises. Surveys are made. Right-of-way has not been obtained. Noted on Nov. 8.

LIGHT AND POWER PLANTS.

(denotes that this work is advertised in Engineering News.)*

ASHLAND, ME.—C. A. Flint, owner of the electric light plant here, proposes changing plant from steam to water power; he also expects to build power plant.

ALBANY, N. Y.—The Public Service Commission, Second District, held a hearing on Dec. 19 on the petition of the Niagara Falls Electrical Transmission Co. for consent to transfer its rights, easements and franchises to the Buffalo, Lockport & Rochester Ry. Co., the latter road being now under construction. The Transmission Co. had planned to develop a 40,000-HP. electrical plant, but owing to difficulties encountered in financing the project, the transfer to the railway company is desired to be made. Frank A. Dudley, of Niagara Falls, appeared as attorney for the Transmission Co. and is to submit a brief as to the jurisdiction of the Public Service Commission to grant the company's petition. Pending the making of a decision in the matter, the Commission has detailed engineers to look into the construction and safety of the Transmission Co.'s line. Charles B. Hill, 550 Ellicott Sq., Buffalo, is Pres. of the Buffalo, Lockport & Rochester Ry. Co.

BUFFALO, N. Y.—J. N. Adam, Mayor, has recommended to the Board of Aldermen a contract with the Welsbach Street Lighting Co. of America, 546 Main St., for placing incandescent gas burners throughout the city. The company will supply lampheads with the incandescent burners for 8 cts. per night per lamp, 5,000 or more heads to be installed, the contract to run five years.

TRENTON, N. J.—Bids are asked until Dec. 31, by J. Williard Morgan, State Comptroller, for furnishing electric current needed for lighting and power purposes in and about the State House, West State St., Trenton, for a period of three or five years. Maximum current required will be 1,500 amp., 110 volts a. c. 60-cycle, single-phase for lighting purposes, and desk fans motors; for elevators, motors, shops, blower fans, etc., a maximum current of 200 amp., 220 volts d. c., will be required. Bids must be submitted on a net flat meter rate per KW.-hr. for both classes of service. Current to be furnished by meter or meters furnished and maintained by the bidder.

ROYER, PA.—We are officially advised that bids will be received about March for installing a power plant for the Morrison's Cove Electric Light & Power Co. The plant will be operated by water, and will furnish lighting to Martinsburg and Williamsburg, Pa. Power probably will be supplied to crushers at Royer and vicinity. Complete equipment and about twelve miles of transmission lines will be required. Estimated cost, $45,000. Frank W. Moore, Box 557, Indiana, Pa., is Res. Engr.

BALTIMORE, MD.—The Consolidated Gas, Electric Light & Power Co., P. O. Keilholtz, Engr., Liberty and Lexington Sts., has awarded contract to HARRY H. BROWN, 109 Clay St., for improvements to its Penn St. electric sub-station. A new roof, supported by steel trusses, will be built, also skylight and ventilators, and a cable and wire tower constructed.

BALTIMORE, MD.—See under Buildings.

RICHMOND, VA.—Bids are asked until Dec. 30 by W. P. Knowles, Supt. City Gas Works, for furnishing pipe and labor and material for constructing 6, 10, 12 and 20-in. gas mains to be installed in certain streets.

GRAFTON, W. VA.—John T. McGraw and associates, purchasers of Grafton Gas & Electric Light Co., will double capacity of electric plant, it is stated. Improvements to be undertaken include installation of 150-HP. engine to operate dynamo, furnishing power for traction company's cars, and erection of addition to boiler-rooms, providing space for two new boilers. About $20,000 will be expended. It is also contemplated to build coal tipple and coal bins, latter to be used for storing coal from mines at Simpson, W. Va.

QUINCY, FLA.—The city proposes to expend about $10,000 soon to improve the municipal electric plant. A new boiler of 150 HP., one 75-KW. alternating-current, 2,300-volt generator and engine will probably be installed. J. B. Price is Supt.

DADEVILLE, ALA.—The city will sell $10,000 of bonds about Jan. 1 for improvements to the electric light plant. Wilson Black is Mgr.

LECOMPTE, LA.—Bids will be received about Feb. 1 for construction of an electric light plant, to cost $10,000. W. H. Jones is City Clerk; Baldwin Wood, of New Orleans, is Engr. of Const.

MOREHEAD, KY.—The Reliance Engineering Co., Fourth National Bank Bldg., Cincinnati, Ohio, has been selected to prepare plans for a municipal electric light plant, to cost about $10,000.

COLUMBUS, OHIO.—Bids are asked until Dec. 30 by Edward F. McGuire, Secy. Bd. Pub. Service, for furnishing and delivering on or before Jan. 15, 1908, at the municipal electric light plant, Dublin Ave., cable and wire for a 1,000-KW. generator and motor-driven exciter.

GARRETT, IND.—Plans are being prepared for additions to the municipal electric lighting system, which include the installation of an engine, generator and a new arc lighting system. G. C. Scott is Supt., Garrett.

RIDGEVILLE, IND.—The Ridgeville Electric Light, Heat, Power & Water Co. contemplates the installation of a 30-KW. turbine in its plant. S. C. Lay is Mgr.

TERRE HAUTE, IND.—F. M. Fauvre, Paul H. White, 1621 Talbott Ave., and others, of Indianapolis, are preparing to construct and equip a power-house in the coal field south of Terre Haute, and high-tension wires to all the towns and cities within a radius of 75 miles, to furnish electricity for light, heat and power.

WHITE PIGEON, MICH.—Plans are being made and bids will soon be asked for the rebuilding of the gas plant recently destroyed by explosion.

MOUNT PLEASANT, MICH.—The Harris Electric Co. will install a generator in its plant and change the system from single to the three-phase system soon. E. O. Harris is Mgr.

HOWARD CITY, MICH.—The Howard City Electric Light & Power Co. contemplates making extensive improvements and additions to its plant, which will include the installation of new switchboard, possibly new generators and additional capacity; also the rebuilding of the dam. L. W. Greene is Mgr.

EATON RAPIDS, MICH.—Improvements are contemplated for the municipal electric light plant, which will include the installation of a 90-KW. dynamo, an 80-HP. engine and a boiler of 125 HP. W. H. [illegible] Supt.

KALAMAZOO, MICH.—The Kalamazoo Power Co. has been incorporated by Frank W. Armstrong, C. S. Smedley and others, it is stated, with a capital of $50,000, to operate a power and steam heating plant in Kalamazoo, and furnish power for manufacturing plants. About 14 Sterling engines in pairs will be installed, each pair being directly connected to a 1,100-KW. generator, making seven in all, and equaling 10,000 HP. W. D. Ball, of Chicago, is the Electrical Engr. Active work will begin in the spring.

HARVARD, ILL.—It is stated that the Harvard Electric Light & Power Co. contemplates the reconstruction of its entire overhead system. C. C. Condon [illegible]

LA HARPE, ILL.—The La Harpe Electric Light & Power Co. is planning to increase the output of its plant by the installation of two direct-current generators of 150 KW. each. A. L. Blythe is Mgr.

SANDWICH, ILL.—A gas plant to cost about $45,000 will be constructed by the city.

LUCK, WIS.—Pederson Bros. have let contract to the MINNEAPOLIS ELECTRIC MOTOR CO., 238 First Ave., N., Minneapolis, Minn., for the complete equipment of an electric lighting plant, the power plant with a rating of 60 KW. will be installed.

DES MOINES, IOWA.—The Des Moines Gas Co. is preparing to enlarge and improve its plant; probable cost of work, $100,000. Jansen Haines is Mgr.

HOUSTON, TEX.—Bids are asked until Jan. 15 by James Knox Taylor, Supervising Arch., Treasury Dept., Washington, D. C., for the heating and the electric wiring in the post-office building at Fort Worth, Tex.: Heating: Kennison Bros., Dallas, Tex., $7,300; Collins Bros., Houston, Tex., $11,000; Van Zandt Plumbing & Heating Co., Fort Worth, Tex., $8,221. J. H. Maddigan, Dallas, Tex., $8,567. Electric wiring: Empire Electric Co., Macon, Ga., $2,409; L. H. Nielsen Co., Pittsburg, Pa., $1,900; Roberts Electric Co., Sherman, Tex., $1,795; William A. Carrao Electric Co., St. Louis, Mo., $1,664; Charles F. Brown, New York, $1,974; R. F. Fletcher Co., Columbus, Ohio, $2,020.

SALIDA, COLO.—The Salida Light, Power & Utility Co. is contemplating the construction of a hydro-electric plant, 10,000 ft. water pipe line, and installing a 750-KW. unit. F. A. Sparks is Supt.

CANON CITY, COLO.—The Colorado Heat & Power Co. has let a contract to the WESTINGHOUSE MACHINE CO., Westinghouse Bldg., Pittsburg, Pa., for a 1,200-HP. turbine engine for its power plant, which will supplement other Westinghouse turbines installed some time ago.

SAN FRANCISCO, CAL.—The Northern California Power Co. is contemplating the construction of a hydro-electric station having an output of 20,500 HP. E. V. D. Johnson is Mgr.

SACRAMENTO, CAL.—Plans and specifications for a municipal underground conduit electric street lighting system have been presented to the City Trustees by Edw. J. Carragher, Chn. of Com., who has charge of the work of lighting the city streets. The plans have been prepared by C. L. Cory, 200 California St., San Francisco, who estimates the cost as follows: Station building of fireproof construction, including foundation, $16,500; electrical machinery, $22,150; 600 arc lamps, $30,000; underground conduit system, $26,100; 184 c.-l. posts, $18,600; copper wire, $39,350; engineer's plans and construction, $11,300; steam machinery installed complete, including 50,000-gallon oil tank, $73,200; total, $237,200.

PORT ARTHUR, ONT.—The city of Port Arthur has commissioned Smith, Kerry & Chace, Confederation Life Bldg., Toronto, to make a survey for power development at Silver Falls on Kaministikura River, about 25 miles distant from Port Arthur.

WINNIPEG, MAN.—Cecil B. Smith, of Smith, Kerry & Chace, Confederation Life Bldg., Toronto, Ont., Ch. Engr. Power Construction Dept., with local office at the Carnegie Library, Winnipeg, writes us that bids were called for by items and in bulk sum for completed power plant. One hundred bids were received on Oct. 1. The bid of the Anglo-Canadian Engineering Co., St. Helens Pl., London, E. C., for a complete plant in accordance with various specifications and plans, was recommended by the Chief Engineer and by Board of Control and passed by Council Nov. 4, price $500,000, taking 4% city bonds in payment at 92. This contract award was vetoed by the Mayor on Nov. 6. It is now being considered whether to call for new bids. In the meantime the construction of 24 miles of light railway between Lac du Bonnet C. P. R., and Point du Bois is being proceeded with and will be completed about May 1. This railway is required for the transportation of materials and heavy machinery to Point du Bois. The main elements of the work are: Hydraulic construction for 60,000 HP. (46-ft. head); power-house construction for 30,000 HP.; power-house machinery for 25,000 HP. (five units of 5,000 HP. each); sheet towers, aluminum [illegible] miles of 70,000-volt transmission [illegible] HP.; terminal station, Winnipeg, 25,000 HP.

BRIDGES.

(denotes that this work is advertised in Engineering News.)*

BRIDGEPORT, CONN.—The Congress St. Bridge Commission, M. W. Manwaring, Chn., has unanimously recommended the construction of a reinforced concrete structure, with two-leaf lift 70-ft. steel draw, to cost $290,000. The bridge will provide for all traffic, including trolleys; owing to difficulty in reaching an agreement with the New York, New Haven & Hartford R. R. Co., and on account of the present condition of the bond market, action is deferred until the Legislature meets. R. M. Berrien is Engr., Comm. Bridges.

ALBANY, N. Y.—A hearing was given by the Public Service Commission, Second District, on Dec. 19, on the petition of the Buffalo, Lockport & Rochester Ry. Co. in the matter of the railway crossing of the New York Central R. R. tracks on an overhead bridge in the town of Royalton, Niagara County, and also for a determination as to the manner in which the company's single track system shall cross a spur track of the New York Central R. R. on State St. or East State St., in the village of Brockport, and also as to the proportion of the expense to be paid by each road. The petition of the applicant company was granted, the crossing at Royalton to be an overhead bridge, and at Brockport to be at grade. Charles B. Hill, Buffalo, N. Y., is Pres., Buffalo, Lockport & Rochester Ry. Co.

NEW YORK, N. Y.—The following bids were received on Dec. 9 by James W. Stevenson, Comr. Bridges, for the construction of the masonry piers, surface and sub-surface changes, and steel superstructure of the Manhattan and Brooklyn approaches of the Manhattan bridge over East River, between the Boroughs of Manhattan and Brooklyn: JOHN C. ROGERS, 13-21 Park Row, $2,167,000 (awarded contract); Williams Engineering Co., 13-21 Park Row, $2,416,820; McClintock-Marshall Construction Co., 13 Park Row, $2,667,978; Maryland Steel Co., 71 Broadway, $2,179,000.

LE ROY, N. Y.—Plans and specifications are asked until Feb. 1 for a bridge over Oatka River in Le Roy. For further information address, Philo J. Sperry, of Le Roy.

CROSSWICKS, N. J.—Bids are asked until Dec. 27 by Boards of Chosen Freeholders of the Counties of Burlington and Mercer at the Court House, Mt. Holly, for constructing a bridge over Crosswicks Creek from North Crosswicks in the County of Mercer, to Crosswicks in the County of Burlington, bids to be submitted on four propositions, as follows: (a) For the construction and completion of concrete abutments, wing-walls and pier, steel superstructure and the necessary grading of approaches for a bridge; (b) for the construction and completion of concrete abutments, wing-walls, pier and steel superstructure for a bridge; (c) for the necessary grading of approaches for a bridge; (d) for the construction and completion of a two-span concrete arch bridge and approaches.

OCALA, FLA.—Bids are asked until Jan. 8 by Marion County for the construction of a steel bridge across the Withlacoochee River at Stokes Ferry. S. T. Sistrunk is Clk. Bd. County Comrs.

DUNNELLON, FLA.—Bids are asked until Jan. 8 by Marion County for the construction of a steel bridge across the Blue River, near here. S. T. Sistrunk is Clk. Bd. County Comrs.

*NASHVILLE, TENN.—Bids are asked until 3 p. m., Jan. 22, by the Cumberland River Bridge Committee of Davidson County, Cole Bldg., Nashville, for the following steel bridge work: For furnishing all materials and the manufacture and erection of steel spans listed below: Four spans deck plate girders 53 ft. 2 ins. center to center of bearings; one span deck plate girder, 70 ft. center to center of bearings; two rolled I-beam spans; four through truss spans, 175 ft. center to center end pins; one deck truss 98 ft. 7 ins. center to center end pins; two 318-ft. through truss spans. These spans are to be erected in two bridges across Cumberland River, in Nashville, Tenn. They are to be extra heavy highway structures and the tonnage required will be about 3,000 tons. J. K. Rains is Chn. Com. H. M. Jones is Engr.

CINCINNATI, OHIO.—Bids are asked until noon, Jan. 3, by the Board County Commissioners for the construction of a culvert on Cooper Ave., Sycamore Township.

CINCINNATI, OHIO.—Bids are asked until Jan. 3 by the Board of County Commissioners, Fred. Dreihs, Clk., for constructing two culverts, one on Cooper Ave., and the other on Wyscarver Road, Sycamore Township.

AKRON, OHIO.—Plans and specifications for the construction of a new steel-concrete bridge at East Market St., near the Union Depot, prepared by the Cleveland, Akron & Columbus Ry. Co.'s engineers, have been submitted to J. W. Payne, City Engr. The Erie, Baltimore & Ohio and Cleveland, Akron & Columbus R. R. companies will jointly construct the bridge.

DUNKINSVILLE, OHIO.—Bids are asked until noon, Jan. 3, by S. S. Jones, County Audr., Adams County, for the construction of the superstructure of a bridge over Lick Fork of Brush Creek to connect the terminus of the Killinstown and Vaughen Chapel turnpike with the West Union and Jacksonville turnpike at a point one-quarter of a mile from Dunkinsville, Adams County, consisting of an 80-ft. span of five sections; each section being 16 ft. in length with a single roadway 16 ft. in width.

PEORIA, ILL.—Plans are being prepared for the construction of the new double-track bridge for the Peoria & Pekin Union Ry. Co. across to the gravity yards at the lower end of the city. Estimated cost, $450,000. William Hassman, Peoria, Ill., is M. M. and M. C. B.

CRESTON, IOWA.—Bids are asked until Jan. 7 by W. F. Craig, County Audr., for furnishing material and erecting all bridges and for all steel pipe and cement work in this county during the year 1908.

TIPTON, IOWA.—Bids are asked until Jan. 3 by the Board County Supervisors for steel bridges, bridge piling and bridge lumber for the year 1908. P. H. Schneider is County Audr.

LITTLE FALLS, MINN.—Bids are asked until 10 a. m. Dec. 28, by the Board of Supervisors for repairing the Platte River bridge. Thomas O'Neil is Town Clk.

FREMONT, NEB.—Bids are asked until noon, Jan. 15, by C. O. Boe, County Clk., Dodge County, for the construction and erection of the superstructure, the substructure and approaches of all new bridges and for furnishing materials in connection with the same, required in Dodge County, Neb., during the year 1908.

GENEVA, NEB.—Bids are asked until Jan. 14 by the Board of Supervisors, W. C. Peterson, Clk., for furnishing material and erecting all county bridges, both bent and pile, steel and wooden, required by this county, during the year beginning Jan. 14, 1908.

BROOKINGS, S. DAK.—Bids are asked until 2 p. m., Jan. 8, by the County Commissioners, Brookings County, for the construction of all bridges that may be ordered during the year 1908.

REDFIELD, S. DAK.—Bids are asked until noon, Jan. 10, by W. J. Bingham, County Audr., Spink County, for the construction of all bridges that may be ordered by the County Commissioners.

DALLAS, TEX.—The city will have constructed a concrete bridge, 60 ft. wide, with a 20-ft. opening for the passage of water.

EL PASO, TEX.—Plans for the construction of the viaduct over Austin St., prepared by D. K. Collum, Bridge Engr., Houston, Tex., for the Galveston, Harrisburg & San Antonio Ry. Co., are nearing completion.

HOUSTON, TEX.—The following contracts were awarded on Dec. 12 by the County Commissioners for the construction of (a) wooden bridge over Piney gulley, 255 ft. long; (b) wooden bridge over Plum Creek, 340 ft. long; (c) wooden bridge over Sims bayou, 510 ft. long; (d) wooden bridge over gulley near railroad bridge No. 17, 255 ft. long: (a) A. N. FITZGERALD, $2,530, (c) same, $4,990, (d) same, $2,100, (b) C. DERRICK, $3,549.

CANON CITY, COLO.—The Board of County Commisisoners opened bids on Dec. 6 for a county iron bridge over the river at Texas Creek. The lowest bid was submitted by the Bullin Bridge Co., Pueblo, and the contract will be awarded as soon as the necessary rights-of-way are secured. The new bridge will cost $18,000 and will cross the river just east of the railroad bridge on the West Cliff branch.

SAN LUIS OBISPO, CAL.—The contract for the construction of a bridge across Santa Rosa Creek, near the Cambria public wharf, has been awarded by the Board Supervisors to the ATLANTIC, GULF & PACIFIC CO., Monadnock Bldg., San Francisco, at $3,495.

W. I. SMITH has secured contract for the construction of a bridge across the San Juan River on the La Panza and Bakersfield road, at $3,850.

ESPANOLA, ONT.—DIXON BROS., Campbellford, have been awarded the contract for the construction of the bridge across the Spanish River here.

EDMONTON, ALTA.—J. G. Legrande, Ch. Bridge Engr., Grand Trunk Pacific Ry. Co., estimates the cost of the bridge across the Pembina River, west of here on the main line, at $230,000.

NEW WESTMINSTER, B. C.—The Provincial Government has granted $15,000 toward the new steel bridge across the North Arm of the Fraser River.

VANCOUVER, B. C.—Bids are asked until Dec. 31 by the Chief Commissioner of Lands and Works, Victoria, B. C., for furnishing and delivering f. o. b. scow at Vancouver or New Westminster all the metal work required for the superstructure of a steel wing span. Bids are also asked for furnishing and delivering at the bridge site on the North Arm of the Fraser River on the line of the Cemetery road, fir and cedar piles. About 600 will be required, varying in length from 20 to 45 ft. They must be straight, sound, and not less than 10 ins. at the small end. No butts to be accepted. T. C. Gamble, Pub. Works Engr. Noted last week.

BUILDINGS.

(denotes that this work is advertised in Engineering News.)*

*PROVIDENCE, R. I.—Bids are asked until 3 p. m., Jan. 18, by James Knox Taylor, Superv. Arch., Treasury Dept., Washington, D. C., for installation of a vacuum cleaning system in the U. S. post-office, court-house and custom-house at Providence.

NEW YORK, N. Y.—We are officially advised that Parish & Schroeder, Archs., 5 West 31st St., New York, have plans for a 6-story addition to the Naval Y. M. C. A. building, Sands St., Brooklyn. The addition will follow the design of the present building. Contracts will be let in the spring.

The Municipal Art Commission has approved the designs for a 4-story and attic building to be occupied by the Brooklyn Public Library as a central library building. It will be erected at an estimated cost of $4,500,000 on the plot bounded by Prospect Park Plaza, Eastern Parkway and Flatbush Ave. The building will be of steel skeleton construction, faced with limestone above the base course and granite below. The side of the building facing on the Eastern Parkway will contain all the executive offices and departments of general administration of the Brooklyn Public Library system. The basement will be used for the storage of supplies. The second, or main, floor will contain the apprentice classroom and the interchange and traveling library. The third floor will contain the Library of Congress catalog and the catalog department. The group of rooms devoted exclusively to the use of the public will occupy the central portion of the building, the Flatbush Ave. side, and a small portion of the Underhill Ave. side. It will include the main and special reference rooms, delivery rooms and rooms for exhibition purposes, the children's reading room, the library for the blind, the newspaper reading room, the public document room, the teachers' reference room, the scientific periodical room, the emergency hospital, etc. The main stackroom will face the extension of Underhill Ave. and will be equipped with 13 tiers of steel book stacks.

NEW YORK, N. Y.—We are officially informed that the American Real Estate Co., Westchester Ave. and Southern Boulevard, The Bronx, will erect brick and stone 5-story tenements at Dongan and Fox Sts., and at Dongan and Simpson Sts., The Bronx. The former will be 91.9 × 90.5 ft. and will cost $120,000; the latter will be 94 × 90.5 ft. and will cost $10,000. Edwin K. Martin, 527 Fifth Ave., is Pres.; Herbert H. Morrison, Westchester Ave. and Southern Boulevard, is Arch.

We have been officially advised that W. A. Swasey, Arch., 40 West 33d St., has awarded contract to the P. J. CARLIN CONSTRUCTION CO., 16 East 23d St., for constructing amusement buildings at Steeplechase Park, Coney Island, at $150,000, for George C. Tilyou. It is the intention to extend construction of the park.

TROY, N. Y.—Lawlor & Haase, Archs., 69 Wall St., New York, inform us that bids will be received after Jan. 1 for constructing a 4-story Harvard brick and limestone building, 80 × 245 ft., for the Rensselaer Polytechnic Institute, Troy. The building will be used for an electrical laboratory and will cost $300,000.

PHILADELPHIA, PA.—Watson & Hucker, 1211 Walnut St., have prepared plans for a 3-story, 122 × 120 ft., garage to be erected at 229 North Broad St. by Henry G. Lea, to cost $400,000.

BALTIMORE, MD.—Alonzo M. Hurlock, 224 St. Paul St., will erect an 8 or 9-story fireproof apartment house at the corner Eutaw Pl. and Dolphin St., to cost about $175,000.

Holmes Jones writes us that the Electric Park Co. of Baltimore, 4 Light St., has its own draftsmen engaged in preparing plans for the company's structures.

WASHINGTON, D. C.—Elliott Woods, Supt. of the U. S. Capitol Building and Grounds, Washington, has awarded to C. G. HUSEY & CO., 2850 Second St., Pittsburg, Pa., contract for furnishing copper for the roof of the Senate Office Building at 15.9 cts. per lb. Noted fully on Dec. 19.

RICHMOND, VA.—Bids are asked until 3 p. m., Jan. 20, by the Chairman of the School Board for construction of a high school building. Charles K. Bryant, 1014 East Main St., Richmond, is Arch.; C. P. Walford is Clerk School Bd.

OCALA, FLA.—Bids were received as follows Dec. 19, at the office of James Knox Taylor, Superv. Arch., Treasury Dept., Washington, for the construction of a post-office building at Ocala, Fla.: Charles Hoertz & Son, Grand Rapids, Mich., $71,700; Algernon Blair, Montgomery, Ala., $83,000; Burwell & Hillyer, Jacksonville, Fla., $101,000, 14 months; Miles & Brodt Co., Atlanta, Ga., at $125,000, for erection of proposed temple and office building, seven stories and basement, 60 rooms, 80 × 105 ft., of reinforced concrete. The front and one side faced with pressed brick and trimmed with terra cotta, fireproof, classic style of architecture, arcade through center. L. M. Weathers Company, Cotton Exchange Bldg., Memphis, Tenn., has prepared plans and L. M. Weathers will be Superv. Arch.; Geo. L. Drew, Secy., Bldg. Com., 106 Main St.

TUSCALOOSA, ALA.—We are officially informed that the bids received on Dec. 13 by the Building Committee, University of Alabama, at the Governor's office, Montgomery, were rejected. The specifications called for Mining, Geological, Biological and Mechanical buildings. The work will be readvertised. Frank Lockwood, Montgomery, is Arch.; John W. Abercrombie is Pres. University.

NEW ORLEANS, LA.—We are advised by the GENERAL SUPPLY & CONSTRUCTION CO., 43 West 34th St., New York, N. Y., that it has been awarded general contract, at about $2,000,000, to construct a 16-story brick hotel, 158 × 320 ft., for the Audubon Hotel Co., in New Orleans. Frank M. Andrews, 25 East Third St., Cincinnati, Ohio, is Arch.

Andry & Bendernagel, 211 Camp St., New Orleans, have completed plans for the 3-story Richardson Memorial building, 241 × 65 ft., to cost $150,000.

CHATTANOOGA, TENN.—Joseph Trimby submitted the lowest bid on Dec. 10, at $157,750, for erection of City Hall. It will be three stories high, fireproof, with steam heat, electricity and gas plumbing. The exterior of building, including all cornices and ornamental work will be faced with stone, backed up with brick, terra cotta partition blocks or reinforced concrete, with steel framing for floors, ceiling and roof; roof covered with tile or slate and metal and interior marble work.

CINCINNATI, OHIO.—Edward H. Dornette, Pickering Bldg., has completed plans for the 3-story and basement addition to the 18th District school building for the Board of Education, William Grautman, Clerk. Cost, $125,000.

COLUMBUS, OHIO.—Plans and specifications for the proposed U. S. post-office here have been completed by James Knox Taylor, Superv. Arch., Treasury Dept., Washington, D. C., and bids will be asked for at once. The structure will cost $400,000.

FORT WAYNE, IND.—Bids are asked by Weatherhogg & Crocker, Archs., Hamilton Bank Bldg., until Jan. 7, for erecting a 9-story hotel, 120 × 150 ft., for the Fort Wayne Hotel Co. The building will be constructed of hard brick, Bedford stone, terra cotta and reinforced concrete. Estimated cost, including equipment, $300,000. Bids were at first asked until Dec. 27.

TERRE HAUTE, IND.—Jerome W. Denehie, County Audr., writes us that contract was let to the CHAMPION IRON CO., Kenton, Ohio, at $116,709, on Dec. 20, for constructing a county jail and sheriff's residence and for remodeling the old jail. The new building will be three stories high and of brick and steel construction. W. H. Floyd, 656½ Wabash Ave., Terre Haute, is Arch.

CHICAGO, ILL.—Holabird & Roche, Archs., Monadnock Bldg., have started plans for the proposed city hall building for the city, to cost $4,500,000.

Edmund R. Krause, Arch., 75 East Monroe St., has awarded the following contracts for the superstructure of a warehouse, at Orleans and Ohio Sts., for Tyler & Hippach, 117 North Clinton St.: Masonry, LANQUIST & ILLSLEY, 393 North Clark St.; carpenter work, F. E. NELSON, 138 Washington St. The building will have five stories and will be 60 × 100 ft., of brick and mill construction. Cost, $125,000.

Henry J. Schlacks, Arch., 99 Randolph St., is taking estimates for a hospital building for St. Anthony de Padua, at 19th St. and Marshall Boulevard. The new building will conform with present structure, will have five stories, 50 × 116 ft., and will be of brick, stone and fireproof construction. Cost, $125,000.

CHICAGO, ILL.—Plans will be prepared by C. F. Herman, Arch., 326 City Hall, for a cell house for the House of Correction, 26th St. and California Ave.; to be four tiers in height, 50 × 265 ft., of brick, stone and fireproof construction and to cost $150,000.

Jenney, Mundie & Jensen, Archs., 171 La Salle St., have awarded the following contracts for a mercantile building, at Franklin and Van Buren Sts., for Hirsh, Wickwire & Co., 341 Franklin St.: Masonry, GEORGE THOMSON & CO., 145 La Salle St.; carpenter work, HANSEN BROS., 59 Dearborn St.; plumbing, M. J. CARBOY, 78 Dearborn St. The building will be ten stories high, 100 × 150 ft., of brick, stone and steel construction, and will cost $350,000.

CHICAGO, ILL.—Plans for a hospital and school building to be erected at Washington St. and Fifth Ave., are being prepared for the Chicago Eye, Ear, Nose and Throat Hospital, by Simmons & Fellows, 204 Dearborn St. The building will be twelve stories high, 40 × 80 ft. Estimated cost, $250,000.

LA CROSSE, WIS.—Bids will be received by the State Board of Normal Regents, Madison, at the first meeting in January, for the erection of the normal school building, at La Crosse, to cost $210,000. J. A. Peacock is Pres. Bd., Oconomowoc, Wis.; Van Ryn & De Gelleke, 211 Grand Ave., Milwaukee, are Archs.

DES MOINES, IOWA.—Bids will be received in February or March by the Board of Public Works for the erection of the proposed City Hall to cost about $350,000. Proudfoot & Bird, Crocker Bldg., are Archs.

* MITCHELL, S. DAK.—Bids are asked by James Knox Taylor, Superv. Arch., Treasury Dept., Washington, D. C., until 3 p. m., Jan. 22, for construction, including plumbing, gas piping, heating apparatus, electric conduits and wiring of the U. S. post-office at Mitchell.

ST. LOUIS, MO.—Barnett, Haynes & Barnett, Archs., Frisco Bldg., are preparing plans for a 4-story industrial school building for the St. Philomena's Industrial School. Estimated cost, $150,000.

CALDWELL & DRAKE, Columbus, Ind., have contract for erection of proposed 19-story fireproof building for La Salle Investment Co., and begin construction work soon after Jan. 1. Steel for structure is being manufactured at Caldwell & Drake Iron Co.'s works at Columbus, Ind., and is being rolled at works of Cambria Steel Co., Cambria, Pa. Plans for the building were prepared by H. A. Roach, 721 Olive St.

BERKELEY, CAL.—J. V. Mendenhall, Town Clerk, writes us that five bids were received on Dec. 9, for construction of a Town Hall. On Dec. 11, all bids were rejected and the plans and specifications referred to the Town Hall Committee, which Committee will revise the same, making a reduction of $10,000 or $15,000, as the bids received were above the appropriated amount.

KAMLOOPS, B. C.—Bids are asked until noon, Dec. 31, by the Chief Commissioner, at the Department of Lands and Works, Victoria, B. C., for erecting a court-house at Kamloops. Honeyman & Curtis, Moison Bank Bldg., Vancouver, B. C., are Archs.; F. C. Gamble, Land and Works Dept., Victoria, is Public Works Engr.

WATER SUPPLY—IRRIGATION.

(denotes that this work is advertised in Engineering News.)*

SYRACUSE, N. Y.—Bids will be asked about March 1, for furnishing city with 20,000 tons of 30-in. iron pipe, to be used next year in the construction of the second conduit line from Skaneateles Lake to this city to provide for an auxiliary water supply. Henry C. Allen is City Engr.

The New York Central R. R. Co. will have constructed an aqueduct at Beech St. at the point where the canal passes over the company's tracks. Estimated cost, $100,000.

PHILADELPHIA, PA.—The members of Councils' Committee on Water have approved an estimate of expenses for the newly consolidated Bureau of Water and Filtration for next year totaling $3,420,667. The budget, which was referred to the Finance Committee, provided $1,700,000 for the completion of the filtration system and $1,720,667 for the Bureau of Water.

PUNXSUTAWNEY, PA.—The Citizens' Water Co., with the assistance of the Merchants' Protective Association and the Chamber of Commerce contemplates constructing a water-works system as soon as a charter is secured. As soon as the charter is granted, bids will be asked for pipe, bricks and other

materials for the lines, reservoirs and pumping station as soon as possible; 2,000,000 bricks will be required for the reservoir on Snyder Hill, 200,000 bricks for the pump station and cistern to catch the overflow from the wells and springs, and about 300 tons of c.-i. pipe.

BUTLER, PA.—An application for a charter for the East Butler Water Co. will be made to Governor Stuart in the near future; the company is arranging to establish its plant to meet the demands for water in the new town and will start work on the construction of the pipe lines and reservoir early in the new year.

ALTOONA, PA.—W. H. GOODFELLOW SONS, Altoona, were awarded the contract on Dec. 16 by the Directors of the Poor for furnishing Blair County with 3½ miles 4-in. c.-i. pipe and four tons of oakum to lay same, at $5,658.

CUMBERLAND, MD.—We are officially advised that the contract for a Prescott Corliss cross compound crank and fly wheel pumping engine, with a capacity of 5,000,000 gals. per day, has been awarded by the city to FRED M. PRESCOTT STEAM PUMP CO., 60th and Greenfield Aves., Milwaukee, Wis., at $23,410.

TERRA ALTA, W. VA.—The Terra Alta Water-Works Co. has been incorporated with $10,000 capital stock by W. T. White, Parley DeBerry, T. J. Picking and others.

MAXTON, N. C.—The city has voted bonds for water-works and sewerage. J. M. Bandy, Greensboro, N. C., is Engr.

MACON, GA.—C. K. Lawrence, Chief Engr., Central of Georgia Ry. Co., has planned for the construction of a water plant at the railway shops. Estimated cost, $30,000.

DUBLIN, GA.—See under Sewers.

COLUMBIA, MISS.—See under Sewers.

MOREHEAD, KY.—The city contemplates construction of water-works estimated to cost about $15,000.

VERSAILLES, KY.—We are officially advised that the Holmbol Co., Lincoln Savings Bank Bldg., Louisville, Ky., have been engaged as engineers to prepare plans and specifications for water-works and sewers here, bonds for $60,000 having been voted on Nov. 5 for these improvements.

ZANESVILLE, OHIO.—We are officially advised that THE FRED. M. PRESCOTT STEAM PUMP CO., 60th and Greenfield Aves., Milwaukee, Wis., has been awarded the contract by the city for a horizontal, triple-expansion, direct-acting water-works pumping engine, with a capacity of 6,000,000 gals. per day.

ELGIN, ILL.—The Board of Water Commissioners is considering the establishment of a meter system. Estimated cost, $30,000.

WAUSAU, WIS.—CHARLES FORESTAL, Milwaukee, has been awarded the contract for cutting the drains in the Dancy drainage district at about $83,325. About 1,308,000 cu. yds. will be excavated.

CRESTON, IA.—See under Bridges.

WESLEY, IOWA.—The contract for the construction of the water-works system has been awarded by the City Council to the NATIONAL CONSTRUCTION CO., South Bend, Ind., at about $8,000.

FORT LEAVENWORTH, KAN.—Bids are asked by the Constructing Quartermaster, in triplicate, until 11 a. m., Dec. 27, for construction of water mains, at Fort Leavenworth. Capt. J. E. Normoyle is Constructing Q. M.

FARGO, N. DAK.—Bids will probably soon be asked by the City Auditor for constructing water mains on Tenth Ave., South, from Sixth St. South to 150 ft. from Fifth St. South; on Fourth St. North, from Fifth to Sixth Aves. North, and on Eighth St. North, from Seventh to Tenth Aves North.

S. F. Crabbe, City Engr., has been instructed to prepare plans and specifications for a water main on Ninth Ave. North, from Fifth St. North to the alley between Fifth St. North and Broadway.

FORT McKENZIE, WYO.—TIERSWAY & ACHELE, Denver, were awarded the contract on Dec. 15 for the construction of an additional water main from the Sheridan reservoir to the Fort McKenzie reservoir, at $46,000.

BRONTE, TEX.—G. H. Cumberland, City Engr., is preparing specifications and surveying for a water-works system. The water is to be secured from the Colorado River, three miles from the town.

CORPUS CHRISTIE, TEX.—The city will purchase water-works from the Corpus Christie Water Supply Co. at $35,000.

DENVER, COLO.—Articles incorporating the Empire Irrigation Co. with $2,000,000 capital, to take over the Naturita Canal and Reservoir and the Naturita Cattle and Land Companies, have been filed. The directors are A. D. Struthers, 3930 Justina St., Denver, W. F. Cook, E. R. Stotts and H. D. St. John. The property lies in San Miguel and Montrose Counties. All the franchises, priorities, land and other appurtenances formerly owned by the Naturita Companies have been purchased.

LA JUNTA, COLO.—Articles of incorporation have been filed with the Secretary of State by the Arkansas Valley Water Supply & Power Co. The company proposes to construct a water system for six of the largest towns in the Arkansas Valley, including Sugar City, Manzanola, Ordway, Rocky Ford, Swink and La Junta. Estimated cost, $500,000. James McNean, La Junta, is interested.

SEATTLE, WASH.—We are officially advised that R. H. Thomson, City Engr., has reported upon the estimated cost of the following street improvements: East 65th St. and other streets, water mains, $6,300; 15th Ave. Northwest, water mains, $3,500; 23d Ave. Northwest, water mains, $2,300.

WOODLAND, CAL.—J. A. McMURRAY, Woodland, was awarded the contract on Dec. 6 by the Board of City Trustees for furnishing about 23,000 ft. pipe, iron gates, crosses, tees and other necessary fixtures to extend the water system, at $7,995.

GUELPH, ONT.—W. M. Davis, C. E., has submitted to the City Council the following estimates of projected civic works: Conduit, $67,943; reservoir, $8,418; sand pipe, $22,646; pumping machinery, $16,500. J. G. Lindsay is City Engr.

TORONTO, ONT.—We are officially advised that bids are asked until noon, Jan. 28, by the Board of Control for a 15,000,000 and 6,000,000 Imperial gallon, triple-expansion vertical engine for the main and high level pumping stations. C. H. Rust.

SEWERAGE.

(denotes that this work is advertised in Engineering News.)*

HARTFORD, CONN.—Appropriations have been authorized by the City Council for the following sewers: Ann St. sewer system, $3,258; Homestead Ave. intercepting sewer, Section "A," $3,285.

MOUNT VERNON, N. Y.—The following bids were opened on Dec. 17 by the Common Council for the construction of the Corcoran Manor trunk sewer: Charles J. Sillery, $53,500; Guarino & Covino, $54,500; Frank Nordone, $57,700.

*AUBURN, N. Y.—Bids were received by E. C. Aiken, Mayor, on Dec. 3 for the construction, first, of sewers and appurtenances thereto; second, for the construction of a disposal works for sewer system. The disposal works consist of reinforced concrete, septic tanks and contact beds, and automatic appliances. J. Walter Ackerman, City Engr., advises us that all bids were rejected on Dec. 17. Bids were as follows: (A) Tile 24 ins. long; (B) tile 24 ins. long, including rock; (C) tile 36 ins. long; (D) including rock. Syracuse Excavating Co., Syracuse, (A) $77,147; (C) $79,350. Brayer Bros., Auburn, (A) $98,328; (B) $121,743; (C) $99,702; (D) $123,288. The D. M. Rosser Eng. & Const. Co., (A) $144,082; (B) $288,551; (C) $144,970; (D) $290,984. For the purification plant the bids were as follows: Besche & Beebe, $47,036; D. M. Rosser Eng. & Const. Co., $42,329. Itemized bids are given under Contract Prices this week.

CHESTER, PA.—Bids may soon be asked by the Sewer Committee for the construction of a sewer on Central Ave., from Fourth St., to the Delaware River.

ERIE, PA.—Plans are being prepared for intercepting sewer for 19th St.

HARRISBURG, PA.—The City Council has approved ordinances for construction of three sewers.

KUTZTOWN, PA.—The State Health Department has advised the borough that it must provide itself with a method of disposing of its sewage, on account of the danger of contaminating the water supply of Reading.

LANCASTER, PA.—Bids will soon be asked for constructing new sewers.

MARS, PA.—Council is considering the construction of a sewerage system, and the citizens will vote on it shortly.

CHESTER, W. VA.—John A. George & Sons, East Liverpool, Ohio, are preparing plans for a sewerage system for the Chester Improvement Co. Estimated cost about $18,000.

DUBLIN, GA.—Council has directed an election to be held Jan. 8, to vote on the question of issuing $40,000 bonds, $25,000 for enlarging water-works and extension of sewers, $10,000 for erecting additional grammar school, and $5,000 for street improvements.

COLUMBIA, MISS.—The city has voted $50,000 of bonds for construction of sewerage system and water-works.

*LOUISVILLE, KY.—We are officially advised that the following bids were received on Dec. 17 by the Commissioners of Sewerage for the construction of Section "B" of the Southern Outfall Sewer Contract No. 2: T. B. Jones & Co., St. Louis, Mo., $296,524; Henry Bickel, Louisville, $336,681; E. H. Abadie & Co., Times Bldg., $352,674; Kirshener Construction Co., Cincinnati, Ohio., $370,175; Westwater & Casey, Dublin Pike, Columbus, Ohio, $385,070; New York Continental Jewell Filtration Co., 15 Broad St., New York, N. Y., $397,351; American Engineering & Construction Co., Chicago, Ill., $404,627; E. G. Nave Bro. & Co., Portsmouth, Ohio, $415,240; Irwin Bros., Greenville, Ohio, $416,393; Metropolitan Construction Co., 95 Milk St., Boston, Mass., $439,723; Luck Construction Co., Roanoke, Va., $522,306. The engineer's estimate was $353,145. Charles P. Weaver is Secy.-Treas. Comrs. Sewers. P. L. Atherton is Chn. Itemized bids will be given under Contract Prices next week.

*SPRINGFIELD, OHIO.—A complete list of bids will be published on Jan. 2, for the construction of that portion of the high level intercepting sewer lying in Main St., between Walter St. and Western Ave.; in Western Ave., between Main and Columbia Sts., in Columbia St., between Western Ave. and Light St.; in Light St., between Columbia and North Sts.; in North St., between Light and Factory Sts.; in Factory St., between North and Main Sts.; the amount of work being approximately as follows: 2,076 ft. 24-in. vitrified pipe, plain or reinforced concrete sewer; 5,554 ft. 30-in. vitrified pipe, plain or reinforced concrete sewer; 2,166 ft. 33-in. vitrified pipe, plain or reinforced concrete sewer; 9,376 ft. 6-in. pipe house connections, average depth 10 ft.; 71 6-in. on 24-in. Y branches; 158 6-in. on 30-in. Y branches; 64 6-in. on 33-in. Y branches; 870 ft. 8-in. sanitary sewer; 50 ft. 18-in. sanitary sewer; 10 ft. 30-in. sanitary sewer; 32 round manholes, 4 ft. inside diameter, average depth 12 ft.; eight single drop manholes; one double drop manhole; one regulator as per plan; 41 manhole covers and frames; 475 manhole steps; 115 cu. yds. Class A concrete; 17,875 cu. yds. rock excavation. Bids opened on Dec. 18.

DAYTON, OHIO. — JOHN T. REES was awarded the contract on Dec. 6 by the Board of Public Service for the construction of sanitary sewers through North Dayton at $72,898. Noted fully on Dec. 12.

MANSFIELD, OHIO.—Board Public Service has recommended that the sewer system be extended to the water-works station. Estimated cost would be about $7,000.

STEUBENVILLE, OHIO.—Seven or eight ordinances calling for extensive sewer improvements in the spring have passed Council, including the extension of the Adams St. sewer to Lawson Ave. and along that avenue to Orchard St., Pleasant Heights.

WYOMING, OHIO.—Riggs & Sherman, Toledo, have drafted the preliminary plans for the proposed sewer system; definite action on the work will soon be taken by the City Council.

LOGANSPORT, IND.—Plans for storm water sewer on Sycamore St. have been completed by John Schmidt, City Engr.

GRAND RAPIDS, MICH.—Estimates for constructing sewers have been submitted to the City Council, as follows: In Alexander Ave., from Neland to Cleveland Ave., $6,447; Hovey St., from Straight St. to Lane Ave., $2,330; North Lafayette St., Page St., North Ave., Maud Ave., and Henrietta St., $4,552. It has been recommended that 12-in. sewer be laid from the cemetery across Leonard St. L. W. Anderson is City Engr.

GALVA, ILL.—The Board of Local Improvements has directed plans to be prepared for a sewer system. Estimated cost, $30,000.

JANESVILLE, WIS.—It is proposed to construct the main outlet sewer the coming season at an estimated cost of $60,000. C. V. Kerch is City Engr.

FORT DODGE, IOWA, — All bids for the construction of sanitary sewers have beeen rejected. New bids will be asked. W. T. Evans is Town Clk.

HANLEY FALLS, MINN.—Bids are asked until Jan. 6 by J. M. Hardy, Village Recdr., for constructing sewers.

ST. PAUL, MINN.—The following contracts were awarded on Dec. 16 by the Board of Public Works for the construction of sewers in (a) Armstrong St., from View to Chatsworth St. (b) Stickney, Gates and Page Sts.: (a) JOHN LIND, 34 East Second St., St. Paul, at $7,600; (b) O'NEIL & PRESTON, at $12,457. L. E. Rundlett is City Engr.

EXCELSIOR SPRINGS, COLO.—The City Council on Dec. 12 passed an ordinance for the construction of sewer mains in District No. 14, in Forest Park. The pipe will connect with the sewer already constructed at Glenwood and Wildwood Aves., and from there the mains will run in a southwesterly direction on Wildwood Ave. to the alley between Blocks 1 and 2 of Forest Park addition.

There will also be a 6-in. lateral to connect with the main sewer, which is constructed of 8-in. pipe.

SEATTLE, WASH.—We are officially advised that R. H. Thomson, City Engr., has estimated the cost of the sewers in Atlantic St. and other streets, at $69,000 and in West 64th St., at $6,590.

BAKERSFIELD, CAL.—Bids are asked until 5 p. m., Jan. 6, by the Board of Trustees for the construction and completion of a main land outfall sewer system.

ELMHURST, CAL.—The Elmhurst Board of Trade is interested in a movement to establish a sanitary district.

MEXICO CITY, MEX.—See under Streets and Roads.

GARBAGE DISPOSAL.

PROVIDENCE, R. I.—The following bids were opened on Dec. 10 by the Commissioner of Health Department for the removal of swill, house offal and garbage for a period of five years from May 1, 1908: (a) 1st year; (b) 2d year; (c) 3d year; (d) 4th year; (e) 5th year; (f) total: Chas. E. Clarke, Seekonk, Mass., (f) $120,000, payable in monthly installments of $2,000; T. A. Sampson, of Fall River, (a) $23,875, (b) and (c) $24,000, (d) $26,000, (e) $27,000, (f) $124,875; Jos. J. Nugent, Providence and Seekonk, (a) $25,000, (b) $25,597, (c) $26,625, (d) $27,739, (e) $29,000, (f) $133,961; Opeco Granite Co., Providence, (a) $27,900, (b) $35,250, (f) $142,150; Jas. H. Dillon, $28,850 each year, (f) $142,850; Herbert R. Durfee, Cranston, (a) $27,000, (b) $28,000, (c) $29,000, (d) $30,000, (e) $31,000, (f) $145,000; Geo. A. Field & Son Co., Cranston, (f) $150,000 in monthly installments of $2,500.

PHILADELPHIA, PA.—We are officially advised that the following bids were received on Dec. 5 by George R. Stearns, Dir. Dept. Public Works, for cleaning streets, alleys, inlets, public market houses, and for the removal of ashes, household waste, rubbish, etc., under specification B, during the year 1908: The bids are given in districts; (a) District 1, (b) District 2, (c) District 3, (d) District 4, (e) District 5, (f) District 6, (g) District 7, (h) District 8, (i) the entire city: Edwin H. Vare, Betz Bldg., (a) $149,000, (b) $285,000, (e) $133,909, (i) $1,087,000. Mack Paving & Construction Co., Land Title Bldg., (a) $170,000, (b) $331,000, (c) $188,200, (d) $126,600, (e) $160,500, (f) $98,200, (g) $101,500, (h) $79,700, (i) $1,240,700. Reitter, Peoples & Co., Arcade Bldg., (a) $230,000, (b) $330,000, (c) $220,000, (d) $120,000, (e) $160,000, (f) $98,000, (g) $98,000, (h) $79,000, (i) $1,400,000. William H. Achuff, Falls Road, Ward 24, (f) $98,000. Howard E. Ruch, (c) $164,800. James Curran, 3027 Richmond St., (d) $133,800. James A. Mullen, 5512 Vine St., (g) $113,300, (h) $67,800. David McMahon, East Chelton Ave., (f) $86,930. Johnson & Co., 4551 Lancaster Ave., (g) $119,000, (h) $74,000. Laughlin & Dorney, (c) $150,974. Reitter, Peoples & Co. bid $280,000 for District 2, to remove garbage by boat instead to trolley cars.

The following bids were received on Nov. 29 for the collection of the kitchen garbage and dead animals for the coming year under Specification A: Penn [illegible]duction Co., 14 South Broad St., $488,[illegible] American Product Co., Pennsylvania [illegible], $566,144.

INDIANAPOLIS, IND.—[illegible]ds are asked until Dec. 27 by the Board of Public Works for the collection, removal and disposal of ashes and sweepings in the city for a period of ten years; also same for the collection, removal and disposal of sweepings in this city for a period of ten years. Joseph T. Elliot is [illegible]. Bd.

STREETS AND ROADS.

BROOKLYN, N. Y.—THE BARBER ASPHALT PAVING CO., 114 Liberty St., New York, has been awarded the contract for regulating and repaving with asphalt on foundation concrete foundation Irving Ave., between Suydam St. and Harman St., and between Green Ave. and Myrtle Ave., by Bird S. Coler, Boro. Pres., at the following bid: 11,860 sq. yds. asphalt pavement, $1.25; 100 sq. yds. old stone pavement, relaid, 40 cts.; 1,000 sq. yds. concrete, $5.85; 3,130 lin. ft. new curb, set in concrete, $1.33; 2,500 lin. ft. old curb reset in concrete, 83 cts.; total $31,516. Other bidders were Cranford Co., 199 Montague St. $32,438; Uvalde Co., 1 Broadway, New York, $33,312.

THE BROOKLYN ALCATRAZ CO., 87 Hamilton Ave., has been awarded contract for regulating and repaving with asphalt on a concrete foundation, Skillman St., at the following bid: 7,370 sq. yds. asphalt pavement, $1.25; 10 sq. yds. old stone pavement to be relaid, 40 cts; 1,020 cu. yds. of concrete, $5.90; 3,685 lin. ft. of new curb, set in concrete, $1.25; 1,840 lin. ft. old curb reset in concrete, 75 cts.; 22 noiseless covers and heads, complete, for sewer manholes, each $18; total, $21,617. Other bidders were Cranford Co., $22,516; Uvalde Co., $23,120; Barber Asphalt Paving Co., $23,308.

THE UVALDE CO., 1 Broadway, New York, secured the contract for regulating and repaving with asphalt on concrete foundation roadway of Ten Eyck St., at the following bid: 8,400 sq. yds. asphalt pavement, $1.25; 30 sq. yds. old stone pavement relaid, 40 cts.; 1,170 cu. yds. concrete, $5.90; 240 lin. ft. new curbs, set in concrete, $1.30; 1,200 lin. ft. old curbs to be reset in concrete, 80 cts.; 24 noiseless covers and heads complete, for sewer manholes, each $18, total $23,715. Other bidders were Cranford Co., $24,511, and Barber Asphalt Paving Co., $24,235. Bids received on Dec. 4.

FORT HAMILTON, (Brooklyn post-office) N. Y.—Bids are asked by the Constructing Quartermaster, in triplicate, until 11 a. m., Jan. 15, for grading and removing stone wall. Capt. Chas. T. Baker is Constructing Q. M., Fort Hamilton, Brooklyn, N. Y.

PATCHOGUE, L. I., N. Y.—We are officially advised that plans and specifications and bids are asked by the Board of Trustees until Jan. 14 for the construction of a shore driveway along the bay front between Rider and Cedar Aves., the driveway to be about 1,425 × 6 ft. and about four feet above high water mark. J. Fred Flugrath is Village Clk.

NEW BRUNSWICK, N. J.—Bids are asked until 11 a. m., Dec. 27, by the Board of Chosen Freeholders, Middlesex County, for the construction of stone and gravel roads as follows: Beginning at the Half Acre Hotel in the Township of Monroe and extending therefrom to the intersection with the Jamesburg and Englishtown road, near Thilo Thomas's place, a distance of 17,600 ft.; beginning at the Colonia Station and running from thence to the station at Avenel, in the township of Woodbridge, a distance of 8,416 ft.; beginning at the Mile Run Brook where the Mile Run Brook crosses Livingston Ave., and extending from thence westerly a distance of 5,910 ft.; beginning at the point where the Trenton and New Brunswick Trolley crosses the Plainsboro road, and extending from thence toward Cranbury, a distance of 5,300 ft.; beginning at Main St. in the Town of Woodbridge at the point where the township macadam road ends, and extending from thence toward New Brunswick, a distance of 9,200 ft.; beginning at the end of the switch on the road on the north side of the Raritan near the end of the Albany St. bridge, and extending from thence toward Bound Brook, a distance of 8,775 ft.; beginning in the City of Perth Amboy on State St. at the end of the new macadam, and extending from thence toward Sewaren, a distance of 7,148 ft. Frank H. Pownall is Dir. Bd. Chosen Freeholders. M. Irving Demarest is Clk.

JERSEY CITY, N. J.—Bids are asked until Jan. 2, by the Boulevard Commissioners, for furnishing 2,500 yds. broken stone, as may be required in sizes 2½ to 1½; 1,000 yds. road gravel, Roa Hook, Shark River, or equivalent; 1,000 yds. Pike County shale. John C. Sweeney is Clk. Comrs.

HARRISBURG, PA.—We are officially advised that the following bids were received on Dec. 16 by Joseph W. Hunter, State Highway Commissioner, for the construction of 5,280 ft. road in Londonderry Township, Dauphin County: W. S. Sides & Co., Middletown, Pa., $14,419, native stone bottom, lime stone top, C. I. P.; D. J. Rogers, Danville, Pa., $16,398, native stone bottom, limestone top; $16,000, native stone bottom, top, cor. pipe.; W. M. Good & Co., Lancaster, Pa., $13,586, native stone throughout; $14,903, native stone throughout, limestone screenings top, cor. pipe; United Ice & Coal Co., Harrisburg, Pa., $11,947, native stone throughout; $11,851, native stone throughout, cor. pipe; $12,961, native stone throughout, Birdsboro screenings, cor. pipe; $13,776, native stone bottom, Birdsboro trap top, cor. pipe; $12,773, native stone bottom, native stone and limestone mixed in equal parts for second and top courses; J. L. Fraser Co., Philadelphia, Pa., $12,629, material not specified, cor. pipe; The Maryland Co., Philadelphia, Pa., $13,974, local stone bottom, local stone top, cor. pipe; $15,[illegible], local stone bottom, Birdsboro trap top, [illegible]. pipe.

ENHAUT, PA.—The contract for the construction of 3,200 ft., including 525 ft. of brick pavement, of the state highway at

Enhaut, has been awarded by the Supervisors of Spring Township and the County Commissioners to the MARYLAND CO., Philadelphia, Pa.

BALTIMORE, MD.—Bids are asked by the Board of Awards, City Hall, until Dec. 27, for grading, curbing, guttering and paving with bituminous sheet asphalt, asphalt blocks or vitrified brick Konig St. between Linden Ave. and Belair Ave. Eugene F. Rodgers is Clk.

DUBLIN, GA.—See under Sewers.

LAKE PROVIDENCE, LA.—We are officially advised that JOHN HONACHIN was awarded contract on Dec. 17 for paving about four miles of sidewalks with concrete at about $17,500. S. B. Kennedy is Clk.

HAMILTON, OHIO.—Ordinances have been passed authorizing an issue of $16,000 street improvement bonds. A. S. Dillon is City Engr.

AKRON, OHIO.—An ordinance has been passed providing for an issue of $8,700 street improvement bonds. J. W. Payne is City Engr.

CLEVELAND, OHIO.—Specifications for the improvement of Fisher Road from its intersection with the Lake Shore Boulevard and Gilbert Ave. to Euclid Road, and for the improvement of Fisher Road from the limits of the city of Cleveland to the westerly line of Bedford Township, are on file at the office of Engineering News, New York. Bids are asked until 11 a. m., Jan. 4. A. B. Lea is County Engr.

DANVILLE, IND.—The contract for constructing a gravel road in Marion Township, 6,000 ft. in length, has been awarded to HICK SCURRY, Danville, at $3,170. D. D. Mills is County Audr.

VERSAILLES, IND.—Bids are asked until 1 p. m., Jan. 7, by Nicholas Volz, County Audr., for the construction of about three miles of macadamized road upon the Otter Village and Michigan road, in Center Township, Ripley County, Ind.

COLUMBUS, IND.—We are officially advised that J. C. Everroad, Columbus, was awarded the contract on Dec. 16 by the City Council for the construction of cement sidewalks on Eleventh and Twelfth Sts., from Union to California Sts., and curb and gutter on Brown St., from First St. to Fifth St. Lawrence F. Orr is City Clk.

GRAND RAPIDS, MICH.—Estimates for street improvements have been submitted by L. W. Anderson, City Engr., as follows: For repaving Kent St. with brick, from Lyon St. to Crescent Ave., at $4,025; grading and paving North Ionia St., from Monroe to East Fulton St., $5,284; paving South Ottawa St., from East Fulton to Island St., with brick, $3,208. Samuel A. Freshney is Secy. and Gen. Mgr. Bd. Pub. Wks.

GRAND RAPIDS, MICH.—THE WYCKOFF PIPE & CREOSOTING CO., Stamford, Conn., has been awarded the contract for paving the Ann St. bridge, at $4,728.

JAMESTOWN, COLO.—Bids are asked until Dec. 28 by T. W. Jaycox, State Engr., Denver, for the construction and repair of about two miles of county wagon road, from Jamestown to Allen's Park.

TACOMA, WASH.—The following contracts were awarded on Dec. 12 by the city: For paving a portion of Steele St. and other streets with asphalt, BARBER ASPHALT PAVING CO., 114 Liberty St., New York, at $61,400; for paving with sandstone blocks, South 19th, 21st, 23d and 24th Sts. up the hill from Pacific Ave., excepting 21st St., to Tacoma Ave., F. A. KEASEL, at $146,200.

SEATTLE, WASH.—We are officially advised that R. H. Thomson, City Engr., has reported upon the estimated cost of the following street improvements: Alley in Blocks E and F, A. A. Denny's addition, paving, $14,550; alley in Block 14 and other blocks, C. D. Boren's addition, paving, $4,600; alley in Block 107, A. A. Denny's addition, paving, $3,850; alleys in Blocks 26 and 28, A. A. Denny's addition, paving, $4,400; 20th Ave., Northeast, and other streets, grading, $3,750; West Brandon and other streets, grading and planking, $8,600.

Ordinances have been passed ordering the improvement of Washington St., by paving with vitrified brick, at an estimated cost of $2,900, and for Depot St., by grading, at an estimated cost of $5,510.

OLYMPIA, WASH.—The contract for grading State Aid road No. 4, King County, was awarded on Dec. 14 by the State Highway Board to L. H. GOERIG, Seattle, Wash., at $19,700.

WENATCHEE, WASH.—JOHN O'CONNOR and the EAGLE LIVERY CO. have been awarded the contract by the city for grading, curbing, parking, and laying sidewalks on Chelan Ave., at $14,999.

FORT ROSECRANS, (San Diego postoffice), CAL.—Bids are asked by the Constructing Quartermaster until 12 m., Dec. 31, for construction of macadam roadway and gutters. Lieut. B. H. L. Williams is Const. Q. M.

RIVERSIDE, CAL.—The following bids were opened on Dec. 10 by the City Council for the improvement of Fourth St. by grading: McINTYRE CEMENT CO. (awarded contract), $11,235; Peter Schwab, $14,174; Concrete Pipe & Cement Co., $13,860; Mohave Development Co., $11,641; Ben F. Thorpe, $13,672. F. A. Jacobs is City Clk.

MESA CITY, ARIZ.—The City Council has awarded the contract for the construction of concrete walks and gutters to M. L. VIEUX, Phoenix, at $3,500.

MEXICO CITY, MEX.—The Department of Interior has concluded a contract with the COMPANIA SANCARIA DE OBRAS Y BIENES RAICES and the COMPANIA MEXICANA DE ASFALTO for improvement of all the land lying between the Cuauhtemoc Glorieta to Chapultepec, on both sides of the Paseo de la Reforma. The two companies will do all the paving necessary and lay sewerage in the new streets. The improvement of this section means the extension of Mexico City to Chapultepec.

MANUFACTURING PLANTS.

(denotes that this work is advertised in Engineering News.)*

WEST ALBANY, N. Y.—The New York Central & Hudson River R. R. Co., New York City, let mason contract to MARCELLUS & BALLARD, Oneida, N. Y., for two fan houses at West Albany. S. J. Delaney, Albany, is Master Mech.

WATERVLIET, N. Y.—The Litholite Co. has purchased a tract of land north of Sixth St. and adjoining the tracks of the Delaware & Hudson Co., at Watervliet, on which it intends to construct a factory. The work will be started soon.

PITTSBURG, PA.—The Pittsburg Electro-Galvanizing Co., 2624 Smallman St., Pittsburg, has applied for a Pennsylvania charter, the capital being $15,000. It will install equipment for electro-galvanizing pipe, bars, rounds, hoops and bands, angles and other small articles in iron and steel. John A. Hanlon is Pres.; Charles F. Fischer, Secy., and Thomas J. Hanlon, Treas.

PHILADELPHIA, PA.—Ballinger & Perrot, Archs., 1200 Chestnut St., will prepare plans for a 4-story factory building for W. B. Barrow, to cost $50,000.

THE UNION IMPROVEMENT CO., of Wilmington, Del., has been awarded the contract to make alterations to the old morocco shop at Ninth and Walnut Sts., by the Girard Chemical Co., of Philadelphia. The cost of the improvements will be between $12,000 and $15,000. The building will be ready for occupancy by the Philadelphia concern about March 25. The firm is engaged in the manufacture of patent medicines.

ROANOKE, VA.—It is reported that JOHN P. PETTYJOHN, Lynchburg, Va., has secured contract to erect repair shops for the Norfolk & Western Ry. Co. C. S. Churchill, Ch. Engr., Roanoke.

NORFOLK, VA.—The Norfolk Marine Ry. Co. will install new machinery in plant to cost about $10,000. Shops are now equipped with machine shop, boiler shop and blacksmith shop. Dave Howard is Mgr.

DAVIDSON, N. C.—The Delburg Cotton Mills is planning to proceed with construction and equipment of proposed plant. This company was organized last July with capital stock of $100,000 to build 2,500-spindle yarn mill. J. P. Munroe is Pres.

FAIRMONT, S. C.—The Tyger Cotton Mills will build another plant to cost about $300,000. The company has purchased water-power at $10,000, which will be developed to transmit power for the mill. Present equipment is 8,132 ring spindles and 256 looms manufacturing shirting.

COLUMBIA, S. C.—D. G. Zeigler, National Loan and Exchange Bank Bldg., Columbia, is interested in steel construction for a cotton factory.

CALHOUN, GA.—The Echota Cotton Mills have been organized with $100,000 capital stock and will erect a building for manufacturing print cloth. C. D. Millstead of Ludwig & Co., Engrs., Empire Bldg., Atlanta, Ga., has been engaged as Engr. T. W. Harbin is Pres.

BONITA, MISS.—The Millbrooke Lumber Co. has been organized to build a hardwood sawmill with daily capacity of 40,000 ft., investing about $10,000. Mill will be operated by J. A. Spaulding.

JACKSON, MISS.—It is reported that the Mississippi Valley Cotton Batting Mills, recently destroyed by fire, will be rebuilt immediately. A loss of about $40,000 was sustained. J. E. Nelson and Louis Rothschild are the owners.

KOSCIUSKO, MISS.—The Kosciusko Oil Mill & Fertilizer Co. will erect brick cotton-oil mill at cost of about $15,000. J. O. Ashworth is Arch. and Mgr.; W. B. Potts is Pres.

NATCHEZ, MISS.—The Natchez Pneumatic Collar & Harness Co. will erect two-story building 100 × 30 ft.; necessary equipment will be installed. The company will manufacture pneumatic collars, harness, pads, etc.; W. D. Elliott is Pres.; G. Davis, Secy. and Treas. W. E. Wren is Gen. Mgr.

MONROE, LA.—A factory will be erected here to make rims and spokes for wagon wheels, pick handles, ax handles, etc. Isaac Scott, of Ruston, La., is interested. Capital, $15,000.

MEMPHIS, TENN.—John Wade & Sons, 50 North Front St., will begin erection of grain elevator and warehouse soon, it is stated. It will have a bulk capacity of 90,000 bu. and will be equipped with power shovels for loading and unloading bulk grain and automatic sacking scale with capacity of six sacks per minute. Total cost, about $30,000. Fred. Friedline, 255 La Salle St., Chicago, Ill., is Arch. and Engr.

PADUCAH, KY.—The city is considering a proposition submitted by M. F. Van Buskirk, Pres. of the United States Construction & Utilization Co., Rochester, N. Y., and F. G. Wiselogel, Engr., for the construction of a reducing plant in which to convert garbage into fertilizer and soap fats. The company proposes to erect a concrete building equipped on the unit plant with a daily capacity of 10,000 tons, which it will give to the city under a guaranty for $30,000, or will operate the plant itself, city paying $3,500 annually. L. A. Washington is City Engr.

YOUNGSTOWN, OHIO.—The United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburg, Pa., has decided to build an addition 90 × 120 ft., to the erecting shop of the Lloyd-Booth Co. department at Youngstown. Work on the new building will be started next spring.

SALEM, OHIO.—We are officially advised that contracts will be let in February for constructing a one-story brick or concrete factory building at Salem for the American Case & Register Co., Alliance, Ohio. The building will contain 50,000 sq. ft. of floor space.

CINCINNATI, OHIO.—Jarvis Hunt, 100 Jackson Boulevard, Chicago, Ill., awarded general contract to ROCHE-BRUNER CONSTRUCTION CO., Johnston Bldg., Cincinnati, for a cold storage plant at Freeman and Kenyon Aves., Cincinnati, for the Merchants' Ice & Cold Storage Co., F. J. Dorger, Pres., Union Trust Bldg., Cincinnati. Plant consists of ice house, 1½ stories, 27 × 112 ft., cold storage and freezing building, eight stories, 110 × 165 ft., power-house 1½ stories, 92 × 80 ft., and boiler house, 1½ stories, 85 × 65 ft. The buildings are to be built of reinforced concrete, and will cost $500,000.

ELKHART, IND.—The Lake Shore & Michigan Southern Ry. Co. has purchased land at Elkhart, to be used as the site for a new locomotive shop. M. J. McCarthy, Elkhart, is Master Mech.

QUINCY, ILL.—Harvey Chatten, Arch., Wells Bldg., has prepared plans for a 3-story factory building for Henry Dayton, to cost $25,000.

BURLINGTON, IOWA.—Chittenden & Eastman Co. contemplate the erection of a 6-story manufacturing building in the spring. Estimated cost, $100,000.

LINCOLN, NEB.—Tyler & Brandt, 7401 Funke Bldg., have prepared plans for an addition, 50 × 110 ft., to the rear of their factory at 208 South Eleventh St., Lincoln.

ST. LOUIS, MO.—Tait & Nordmeyer, Consult. Engrs., Wright Bldg., are receiving bids for a 3-story packing plant, 100 × 140 ft., at Missouri Ave. and La Salle St., for the Heil Packing Co., 1100 Missouri Ave.

LITTLE ROCK, ARK.—R. W. Polk, of Adams, Boyle & Coates, John R. Fordyce, Roy Martin and Will Terry are interested in erecting a rice mill, to cost about $100,000.

EDMONDS, WASH.—Bids are being received by the Washington Steel & Bolt Co. on the steel plant which it proposes to run in conjunction with the bolt works. A. G. Pike is Gen. Mgr., Edmonds.

HOQUOM, WASH.—It is stated that Ernest Block, W. D. Kirton and others propose to build a new factory and brewery at Hoquiam, to cost about $100,000.

EUREKA, CAL.—A contract has been let to C. ARTHUR & SON for erection of the warehouse machine shop and garage building of the Humboldt Engineering & Supply Co., at C and Second Sts., to cost $10,000.

TUCSON, ARIZ.—The Gardiner, Worthen & Goss Co., Tucson, whose plant was recently destroyed by fire, is making arrangements for rebuilding the plant on another location adjacent to railroad trackage. The plant contemplated will be arranged particularly for structural and general sheet iron work and the manufacture of a mine car of improved design.

FORT WILLIAM, ONT.—Work on the $500,000 car building plant to be erected by the Fort William Car Co. will commence soon, the stock having been subscribed.

BARNET & McQUEEN have secured the contract for the erection of grain elevator "D" for the Canadian Pacific Ry. The price is about $900,000.

VANCOUVER, B. C.—The Canadian Fish & Cold Storage Co. has been formed and will establish a plant at Prince Rupert in the spring. The officers are: Andrew Kelly, Western Flour Mills Co., Winnipeg; James Caruthers, Board of Trade Bldg., Montreal. George H. Collins, Vancouver, is Managing Dir.

GUADALAJARA, MEXICO.—Ruiz & Lobato, commission merchants of this city, have awarded to the GREAT WESTERN MFG. CO., 1223 Union Ave., Kansas City, Mo., a contract for machinery for the flour mill that they are now building in this city. The machinery will cost about $27,000, and its capacity will be 300 bbls. of flour daily. It is expected to have the machinery installed ready for operation in about six months. The mill is being substantially built of stone, brick and steel, and completed it will represent an investment of $100,000. A. B. Colton is Mgr.

CONTRACT PRICES.

[Where (*) precedes items under Contract Prices the work was advertised in Engineering News.]

*SEWERS.—Louisville, Ky.—Itemized bids received on Dec. 17 by the Commissioners of Sewerage for the construction of a sewer, known as Section "B," of the Southern Outfall Sewer Contract No. 2, will be given next week under Contract Prices. (Totals are given this week under Sewerage.)

*SEWERS.—Auburn, N. Y.—Bids were received by E. C. Aiken, Mayor, on Dec. 3, for the construction, first, of sewers and appurtenances thereto; second, for the construction of a disposal works for sewer system. The bids in detail were as follows—(A) Syracuse Excavating Co., Syracuse, N. Y.; (B) Brayer Bros., 102 Genesee St., Auburn; (C) D. M. Rosser Eng. & Construction Co.; (D) Besche & Beebe. (Bids were rejected on Dec. 17, we are advised by J. Walter Ackerman, City Engr.):

	A		B		C	
	Tile, length		Tile, length		Tile, length	
	24-in.	36-in.	24-in.	36-in.	24-in.	36-in.
14,750 ft. 8" vitrified sewer tile	$0.80	$0.85	$1.09	$1.11	$1.27	$1.29
11,314 ft. 10" vitrified sewer tile	.90	.95	1.17	1.20	1.58	1.60
6,025 ft. 12" vitrified sewer tile	1.00	1.05	1.25	1.28	2.43	2.46
3,622 ft. 15" vitrified sewer tile	1.20	1.25	1.34	1.38	1.87	1.90
304 ft. 18" vitrified sewer tile	1.35	1.40	1.46	1.50	1.80	1.85
1,250 ft. 20" vitrified sewer tile	1.55	1.60	1.65	1.70	2.13	2.18
17,000 ft. 5" vitrified tile house services	.40	.42	.82	.84	62	.62
5,657 cu. yds. excav. rock per cu. yd.	3.50	....	3.50	....	3.50	....
24,550 ft. furn. and laying drain tile, 4"	.10	....	.15	....	.20	....
6,002 ft. furn. and laying drain tile, 6"	.12	....	.20	....	.22	....
6,713 ft. furn. and laying drain tile, 8"	.20	....	.25	....	.25	....
721 ft. 84 manholes without drain overflow, per vertical ft.	6 00	....	6.00	....	6.50	....
30 manholes, extra per manhole for drain overflow	6.20	....	2.50	....	5.00	....
12 tanks, flush tanks, setting but not furnishing discharging appliance	80.00	....	50.00	....	60.00	....
150 ft. 3A lead pipe, ½" internal diameter, 3 lbs. per ft.	.40	....	1 00	....	.50	....
12 lampholes, including c.-l. head	18.00	....	15 00	....	10.00	....
50 tons cast-iron pipe	20.00	....	55.00	....	45.00	....
300 cu. yds. embankment, per cu. yd.	.60	....	.40	....	50.00	....
300 cu. yds. excavation, per cu. yd.	.50	....	.40	....	50.00	....
400 cu. yds. filling around drain tiles, per cu. yd.	1.25	....	1.25	....	1.75	....
50,000 ft. B. M. lumber in place for artificial foundations	30.00	....	40.00	....	45.00	....
50,000 ft. B. M. lumber for sheeting and bracing	25.00	....	40.00	....	45.00	....
200 cu. yds. concrete used around tile, etc., per cu. yd.	5 00	....	5.00	....	7.00	....
Totals	$77,147	$79,350	$98,328	$99,702	$144,082	$144,970
SEWERS, INCLUDING ROCK:						
14,750 ft. 8" vitrified sewer tile	....	....	$1.84	$1.86	$3.27	$3.29
11,314 ft. 10" vitrified sewer tile	....	....	1.92	1.95	3.50	3.00
6,025 ft. 12" vitrified sewer tile	....	....	2.00	2.03	5.00	5.10
3,622 ft. 15" vitrified sewer tile	....	....	2.09	2.13	3.81	3.90
304 ft. 18" vitrified sewer tile	....	....	2.21	2.25	3.80	3.85
1,250 ft. 20" vitrified sewer tile	....	....	2.40	2.45	4.15	4.20
17,000 ft. 5" vitrified tile house services	....	....	1.17	1.20	2.50	2.50
24,550 ft. furn. and laying drain tile, 4"	....	....	.40	....	1.70	....
6,002 ft. furn. and laying drain tile, 6"	....	....	.45	....	1.70	....
6,713 ft. furn. and laying drain tile, 8"	....	....	.50	....	1.70	....
Totals	....	....	$131,743	$123,288	$288,551	$290,984
					(D)	(C)
4 sets automatic feeding and disch. appliances for contact filters					$2,600.00	$2,500.00
6,400 cu. yds. earth excavation					.54	.50
10 cu. yds. rock excavation					3.50	3.00
3,200 cu. yds. filling of embankment					.54	.75
CONCRETE MASONRY:						
1,025 cu. yds. A. 1 part Portland cement, 3 parts sand, 5 parts screened gravel					11.20	11.00
1,025 cu. yds. B. 1 part Portland cement, 6 parts sandy gravel taken from pit					11.20	10.00
1,025 cu. yds. C. 1 part Portland cement, 3 parts sand, 4 parts of fine screened gravel, 6 parts of crushed stone					11.20	9.00
1,025 cu. yds. D. 1 part Portland cement, 3 parts sand, 5 parts of crushed Stone					11.20	11.00
11,325 lbs. ¾" steel rods for reinforcing concrete					.07	.06
15,625 lbs. steel fabric for reinforcing concrete					.07	.15
MATERIAL FOR CONTACT BEDS:						
11,025 cu. yds. A. crushed stone, passing a 2" mesh and held on a ¼" mesh					1.80	1.50
11,025 cu. yds. B. bank gravel, passing a 2" mesh and held on a ¼" mesh					1.80	1.50
11,025 cu. yds. C. cinders and clinker, passing a 2" mesh and held on a ¼" mesh					1.80	2.00
484 lin. ft. 20" vit. sewer tile, laid in and about purification plant					.80	.75
268 lin. ft. 15" vit. sewer tile, laid in and about purification plant					.60	.45
1,368 lin. ft. 12" vit. sewer tile, laid in and about purification plant					.40	.35
1,324 lin. ft. 10" vit. sewer tile, laid in and about purification plant					.35	.25
1,919 lin. ft. 8" vit. sewer tile, laid in and about purification plant					.30	.20
1,572 lin. ft. 6" vit. sewer tile, laid in and about purification plant					.25	.15
Lump sum bid for all material not enumerated above, such as: Gate house, building over grit chamber, hand valves, etc.					3,478.50	3,500.00
Lowest combination proposal					$47,086	$42,529

MISCELLANEOUS CONTRACTS.

(denotes that this work is advertised in Engineering News.)*

U. S. RECLAMATION SERVICE.—All news relative to canal projects, etc., will be found under Water Supply—Irrigation.

*VACUUM SYSTEM.—Providence, R. I.—See under Buildings.

CANALS, ETC.—Houston, Tex.—See under Manufacturing Plants.

DITCH.—Council Bluffs, Iowa.—Bids are asked until Jan. 9 for the construction of the Avoca drainage ditch. Estimated cost, $2,914. W. C. Cheyne, County Audr.

WALL.—Denver, Colo.—Contract for building the Cherry Creek wall from Broadway to Downing Ave. has been awarded to the DENVER & PUEBLO CONSTRUCTION CO. at $79,439.

DITCHES.—Forest City, Iowa.—L. J. Nelson, County Audr., states that bids will be received on Jan. 7 for constructing ditches 3 and 11. Estimated cost, $8,464. E. W. Burgitt, Britt, Iowa, is Engr.

DRAIN.—Princeton, Ind.—Geo. W. Smith, of Owensville, Ind., and Thos J. Johnson of Mt. Vernon, Ind., have petitioned for the construction of a drain 75 miles in length through Gibson and Posey Counties.

CONCRETE DRAIN.—Galveston, Tex.—John D. Kelly, City Secy., states that the contract for constructing concrete drain on 19th St., has been awarded to KELSO & VANTRELL, of Galveston, at $17,735.

RAISING LOCK.—Louisa, Ky.—Bids are asked by Lieut.-Col. J. G. Warren, Corps Engrs., U. S. A., Cincinnati, Ohio, until Jan. 20, for raising crest of Lock and Dam 3, Big Sandy River, near Louisa, Ky.

ORDNANCE.—Washington, D. C.—The Bureau of Ordnance, War Dept., Washington, has awarded to the MIDVALE STEEL CO., Philadelphia, Contract for furnishing 800 six-in. forged shot, at $5.75 each.

*GUIDE WALLS, PAVING, ETC.—Wheeling, W. Va.—Bids are asked until 11 a. m., Jan. 25, by Capt. F. C. Boggs, Corps Engrs., U. S. A., for constructing guide walls, grading, paving, etc., at Dam No. 13, Ohio River.

*DITCH.—Plainfield, Wis.—Bids for excavating 24.88 miles of ditch containing approximately 663,994.3 cu. yds. of earth. Time for filing bids expires Jan. 16. For full instructions to bidders, write W. B. Angelo, Plainfield, Wis.

RIPRAP.—Grand Rapids, Mich.—Bids are asked until Jan. 15 by Maj. Chas. Keller, corps Engrs., U. S. A., 57 Park St., Grand Rapids, for furnishing stone for pier filling and riprap at various harbors on eastern shore Lake Michigan.

FLATBOAT.—Cincinnati, Ohio.—Bids were received on Dec. 17 by Lieut.-Col. Wm. T. Rossell, Corps Engrs., U. S. A., for constructing one steel flatboat, as follows: Springfield Boiler & Mfg. Co., $12,650; American Bridge Co., New York, $7,680.

*DRAINAGE TUNNEL.—Colorado Springs, Colo.—Bids are asked until Jan. 15 by E. D. Marr, Secy., for driving about 14,000 ft. of deep drainage tunnel, to be 7 × 10 ft., also for sinking about 600 ft. of shaft to be 5 × 10 ft. in the clear, in the Cripple Creek Mining District.

BULKHEAD.—Southport, N. C.—Bids were received by Lieut. L. Cravens, Constr. Q. M., U. S. A., on Nov. 30, for building creosoted bulkhead at Fort Caswell: Aisop & Pierce, Newport News, Va., $12,000; A. J. Robbins, Southport, N. C., $8,640; Richard Parrott, Newburg, N. Y., $8,944.

METAL LIONS.—Washington, D. C.—Bids were received as follows at the office of the Commissioners of the District, Washington, D. C., for furnishing four metal lions at the Connecticut Ave. bridge: J. L. Mott Iron Works, Home Life Bldg., Washington, $9,429. W. H. Mullins, Salem, Ohio, $3,980.

DRAINAGE.—St. Louis, Mo.—The Little River Drainage Co. of St. Louis, Mo., has been organized by John H. Himmelberger, Otto Kochritzky and George Burrows, of Cape Girardeau, Mo., to drain about 500,000 acres of land in Bollinger, Cape Girardeau, Scott, Stoddard, New Madrid, Dunklin and Pemiscot Counties, Mo.

WHARF.—Avalon, Cal.—William M. Hunt, Jr., of Los Angeles, has applied to the Board of Supervisors for the privilege of constructing a wharf across the tidelands bordering on Avalon Bay. The proposed pier is to begin at the intersection of Catalina and Crescent Aves. and extend 340 ft. in a northeasterly direction. Its cost is estimated at $9,000.

*BOARDWALK.—Atlantic City, N. J.—Bids received by the Streets, Walks and Drives Committee, on Dec. 9 for the construction of a concrete boardwalk along ocean front between Pacific Ave. and Connecticut Ave., to be about 2,900 ft. in length. Contract was awarded to the RAYMOND CONCRETE TILE CO., 71 Nassau St., New York, at $53,800.

*LEVEE DRAINAGE.—Memphis, Tenn.—Capt. W. D. Connor, Corps Engrs., U. S. A., states that no bids were opened on Nov. 25 by the Mississippi River Commission, First and Second Districts, for about 190,000 cu. yds. levee work and 40,000 cu. yds. drainage ditch in Upper St. Francis Levee Dist., the advertisement having been withdrawn. New bids will probably be called for later.

CLEANING AND REPAIRING DITCH.—Monticello, Ill.—Bids are asked until Dec. 28 by the Commissioners of the Lake Fork Special Drainage Dist. Counties of Piatt, Champaign and Douglas a tMonticello, for cleaning out and repairing the main ditch of Sub. Dist. No. 21, Lake Fork Special Drainage Dist., requiring 37,228 cu. yds. excavation. Harvey Fay, County Clk., Monticello.

DITCH.—Wausau, Wis.—Bids were opened Dec. 3 by the Commissioners of the Daucy Drainage District at the office of the Clerk of the Circuit Court, at Wausau, for constructing a main ditch and all its branches. Contract has been awarded to CHAS. FORRESTAL, of Milwaukee, at 6.9 cts. per cu. yd.; total, $83,000. The Harman Engineering Co., 109 South Jefferson Ave., Peoria, Ill., is the Engr.

TELEPHONE SYSTEM.—Regina, Sask.—The Department of Telephones has been created, and is to be presided over by the Commissioner of Railways for Saskatchewan. It is expected that the actual construction work will commence in the spring, should the Legislature approve of the Government scheme. The Government's intention is to build a system of trunk lines through all the more settled portions of the province. S. P. Porter is Deputy Comr. of Railways.

PIER, DOCK, ETC.—Cleveland, Ohio.—Plans probably will be prepared by W. A. Stinchcomb, Park Engr., 214 City Hall, for pier, dock, bridge, etc., to cost $250,000, to be built at foot of East Ninth St. Nothing has been definitely decided about this work and the project depends upon the City of Cleveland and the Detroit & Cleveland Navigation Co. and the Cleveland & Buffalo Transit Co. agreeing upon terms. Bids will not be received before March, 1908.

MONUMENTS.—Vicksburg, Miss.—Bids are asked by the Indian-Vicksburg Military Park Commission, 25 State House, Indianapolis, Ind., until 10 a. m., Jan. 8, for furnishing and erection of granite monuments and markers, in Vicksburg Military Park, at Vicksburg, Miss., at places to be designated by said commission, and will at the same time and place also receive bids for bronze medallions and inscriptions to be placed on said monuments. Plans, details and specifications can be had by applying to H. L. Osborn, Engr., Room 90, Baldwin Block, Indianapolis. Estimated cost, $34,000.

BRICK CHIMNEY.—Portsmouth, Va.—The Bureau of Yards and Docks, Navy Dept., Washington, has prepared specifications covering the construction of a radial brick chimney, 115 ft. high, at the Naval Hospital Reservation, Portsmouth, Va. The foundations will be constructed by the Government. The chimney is to be equipped with a lightning rod and a device for recording the temperature of flue gases. Three calendar months will be allowed for the completion of the work. The specification and plans will be ready for distribution in about 30 days, and can be obtained upon application to the Bureau of Yards and Docks.

LEVEE CONSTRUCTION.—New Orleans, La.—Bids were received on Dec. 16 by the Mississippi River Commission, Fourth District, 1539 Louisiana Ave., New Orleans, for constructing 771,600 cu. yds. of levee work in Lower Tensas, Atchafalaya and Ponchartrain levee districts. Maj. J. F. McIndoe, Corps Engrs., U. S. A. The bids recommended for acceptance are as follows: For Ashley and Glasscock levees, 198,200 cu. yds., R. T. Clark, Natchez, Miss.; Ordee and Roseland levees, 195,900 cu. yds., O. A. Gibson, of Natchez; New Texas levee, 171,500 cu. yds., O. A. Gibson, Natchez; Hollywood levee, 116,000 cu. yds., Hearin & Ryan, Baton Rouge, La.; Dreyfus Lower levee, 90,000 cu. yds., Gibson & Hale, Natchez.

STONE, TREES, POLES, ETC.—Jersey City, N. J.—Bids are asked by John C. Sweeney, Clk. Boulevard Comrs., 580 Newark Ave., Jersey City, until 12.15 p. m., Jan. 2, for furnishing general supplies for fiscal year ending Nov. 30, 1908, including 2,500 yds. broken stone, as may be required in sizes 2½-in. to 1½-in., etc.; 1,000 yds. road gravel, Roa Hook, Shark River, or equivalent; 1,000 yds Pike County shale; 500 gals. cylinder oil, viscosity up to 175, fire test, 600; 500 gals. engine oil, viscosity up to 325, fire test, 425; 5,000 ft. No. 6 R. C. electric line wire; 3,000 ft. No. 6 twin (duplex) R. C. wire braided, 2 color cores; 1,000 ft. ¼-in. galvanized guy wire; 1,000 ¼-in. mast arm wire; 1,500 lbs. best quality white cotton waste; 2,000 arc light globes; 2,500 assorted trees, 3 to 4-in. at butt, Lenden, Oriental Plain, Mountain Ash or Dwarf Poplar, as may be required; 50,000 eliptical copper coated carbons, 1-in. by 11½ ins.; 50,000 elliptical copper coated carbons, 1 in. by 7½ ins.; 50,000 round copper coated carbons, ½-in. by 12 ins.; 250 chestnut poles, straight, clean and sound, 35 ft. long, butt 12 to 14 ins., etc.

*LOCOMOTIVES, ENGINES. — Portland Ore.—Bids were received by Lieut.-Col. S. W. Roessler, Corps Engrs., U. S. A., on Nov. 18 for furnishing and delivering four hoisting engines, three locomotives and two boilers. Under date of Dec. 12 we are officially advised by the U. S. Engineer Office, Portland, that acceptance of the following bids has been recommended: For three locomotives, Davenport Locomotive Works, Davenport, Iowa, $3,032 each; final delivery, 30 days. For furnishing and delivering four single drum hoisting engines, Willamette Iron & Steel Works, Portland, $1,350 each; final delivery, 90 days. For six single drums (alternate): bid of Fairbanks, Morse & Co., Portland, was lowest, at $1,163 each; ("owing to the unsettled condition of the market at present it is considered best to purchase only four engines instead of six"). For four double drum engines or for four double drum engines (alternate); bid of Fairbanks, Morse & Co. was lowest, at $1,420 each; (bids for double drum engines were not considered, single drum engines being deemed satisfactory). For two boilers, the Caldwell Bros. Co., Seattle, at $1,374 each; 15 days.

*LUMBER.—Nashville, Tenn.—Bids were received as follows on Dec. 14th by Maj. Wm. W. Harts, Corps Engrs., U. S. A., for furnishing and delivering about 1,258,695 ft. B. M. long leaf yellow pine lumber: For (A) furnishing 1,258,695 ft. B. M. at Lock A, per B. M.; (B) total. Or (C) same quantity on board U. S. barges at Nashville, per B. M.; (D) total. Or for furnishing (E) 506,491 ft. B. M. at Lock No. 3 and (F) 752,204 ft. B. M. at Lock No. 5. (*failed to fully comply with paragraph 7, instructions to bidders; †, informal.) *A. E. Baird Lumber Co., Nashville, Tenn., (A) $30.50; (B), $38,390; (C) $30.50; (D), $38,390. John W. Zuber, Atlanta, Ga., (A) $30; (B), $37,761. *R. A. and J. J. Williams Co., Philadelphia, Pa., (A) $33; (B), $41,537; (C), $33; (D) $41,537. *G. Elias & Bro., Buffalo, N. Y., (A), $28.73; (B), $36,162; (C) $27.23; (D), $34,274. *The Richwood Lumber Co., Hattiesburg, Miss., (A), $31.75; (B), $39,964; (C), $32.75; (D), $41,222. *Gulfport Creosoting Co., Gulfport, Miss., (A), $29.75; (B), $37,446. Steverson & Herzfeld, Alexander City, Ala., (A), $33.80; (B), $42,544; (C) $32.80; (D), $41,285. T. H. Lake & Co., Mobile, Ala.; Henderson Lumber Co., Sanford, Ala., (A), $30.50; (B), $38,390; (C) $29; (D), $36,502. Southern States Lumber Co., New Orleans, La., (C) $30 for Lock No. 3 quantity delivered at Nashville; $30.50 for Lock No. 5 quantity delivered at Nashville; total, $38,137.

W. C. Rodgers, Hattiesburg, Miss., (A), $26.50; (B) $33,355; (C), $27.50; (D), $34,614. *Chicago Lumber & Coal Co., Chicago, Ill., (A), $25.95; (B), $32,663; (C), $27.50; (D) $34,614. †Meeds Lumber Co., Hattiesburg, Miss., (A), $37; (B) $46.572. †Charles Este Company, Philadelphia, Pa., (A), $29.35; (B), $36,943. *Ravenel-Gabbett Lumber Co., Valdosta, Ga., (A), $30.50; (B), $38,390; (C), $30; (D), $37,761. J. K. Joyce, 1200 1st Nat'l Bank Bldg., Chicago, Ill., (A), $25.25; (B) $31,782; (C), $25.25; (D), $31,782; (E), $31.50 per M. ft. B. M.; total $15,954; (F), $32.50 per M. ft. B. M.; total, $24,447 (bid for delivery on barges at Nashville, (C) and (D), recommended for acceptance. *John B. Ransom & Co., Nashville, Tenn., (A), $30; (B), $37,761; (C) $29.50; (D), $37,131. *Forrest Lumber Co., Clanton, Ala., (A), $31.25; (B), $39,334; (C), $31.75; (D), $39,964.

U. S. POSSESSIONS AND CUBA.

(denotes that this work is advertised in Engineering News.)*

DRAIN TILE.—Panama.—Bids were received Dec. 21 at the office of the Isthmian Canal Commission, Washington, D. C., for furnishing 25,000 ft. porous drain tile, 6 in., and the same amount of 10-in. tile. The lowest bid received was that of Motley, Green & Co., 66 Broad St., New York, at $5,602.

RAILROAD EQUIPMENT.—Porto Rico and Philippines.—J. G. White & Co., 43 Exchange Pl., New York, are purchasing considerable quantities of railroad equipment for the Porto Rico and Philippine contracts. Orders have just been placed with the AMERICAN CAR & FOUNDRY CO. for a seventh consignment of Philippine Railway Co. rolling stock consisting of four combination baggage and passenger cars, to be delivered in March. The cars are to be 3 ft. 6-in. gage, 43 ft. 1½ ins. long over bodies, and 9 ft. 6 ins. wide. The underframes will be steel and the bodies will be of wood. The cars will be placed in immediate use on the completed sections of the lines which terminate in the Southern ports of Cebu and Iloilo. Previously, 19 passenger cars, about 100 freight cars and ten Mogul locomotives have been purchased, though the construction of the lines has been in progress less than one year. Several of the locomotives are already in service.

For the Porto Rico Railways, J. G. White & Co. are buying freight equipment to meet the heavy demand for the transportation of tobacco and sugar cane from the interior over the Caguas extension to San Juan. The first order will include ten box cars and ten flat cars, all having steel underframes.

DUMP BARGES.—Panama.—Bids were received as follows Dec. 21 at the office of the Isthmian Canal Commission, Washington, D. C., for furnishing 100 steel dump barges, capacity not less than 400 nor more than 500 cu. yds. Proposals were asked (a) for delivery complete at Colon; (b) for delivery knocked down at Colon; and (c) for delivery complete at any Atlantic or Gulf port: Fore River Shipbuilding Co., Quincy, Mass., (b) $24,000 each, 210 days. Maryland Steel Co., Sparrow's Point, Md., (b) $19,800 each, 130 to 190 days; (c) at Sparrow's Point, $20,800; 180 days. Alternates: 500 cu. yds. steel dump barges, (b) $23,900; 140 to 200 days; (c) $24,800; 190 days. Motley, Green & Co., 66 Broad St., New York. (b) $23,160; 165 to 210 days. Newport News Shipbuilding & Drydock Co., 1 Broadway, New York, (a) $22,000, 215 to 245 days; (b) $20,800, 200 to 230 days; (c) at Newport News, Va., $20,000; 225 days. Alternates: 490 cu. yds. (a) $31,000; (b) $29,000; (c) $28,400, same time. Pusey & Jones Co., Wilmington, Del., (a) $37,682; 210 days shipment; (b) $31,946, 180 days shipment; (c) at Wilmington, $32,932, 210 days shipment. United States Steel Products Export Co., 21 State St., New York, (b) $25,200, 245 to 335 days; (c) at New Orleans, $23,250, 335 days.

POWER PLANT.—Panama. — Requisitions have been received from the Isthmus by the Isthmian Canal Commission for the construction and equipment of a large power-plant to handle the material to be used in the construction of the Gatun dam. The requisitions cover the following machinery: Six 350-HP. water-tube boilers with oil burning equipment. Two 18-in. horizontal engine-driven centrifugal circulating pumps, direct-connected with two non-condensing engines, tandem compound, single-valve; maximum HP., 100; 200 r. p. m.; average HP., 60 to 75. One cross-compound 4-valve Corliss non-condensing engine, direct connected to 400-KW. alternating-current generator, 600 HP. rated; 900 HP. maximum; 125 lbs. initial steam pressure; 100 r. p. m.; maximum piston speed, 650 ft. per minute. This engine is for the Culebra-Empire power plant.) Five 1,000-K. V. A. generators, 2,200-volt, 3-phase; Y-type, with three 185-KW. transformers. Five 750-KW. turbine generators connected to a K. A. generator. Two engine-driven dry vacuum pumps. One 400-KW., 3-phase, 2,300-volt, 60-cycle, reversible field, engine-type generator; 1,000 r. p. m. The power plant as a whole is to include boilers, fittings, smoke-stack, feed pumps, feed-water heaters, economizer, fan, damper, regulator, turbine condensers, vacuum pump, centrifugal pump, electric crane, generators, exciters, rotary converters, transformers and switch-board.

Also the following conveying machinery: Eight duplex cable-ways and four duplex unloading cableways, operating buckets, with necessary electric [illegible] ing same. The contract is to [illegible] cables, hauling ropes, carriers, grab buckets, operating machinery. Lift, 125 ft.; running capacity ten tons at hook. Two 15 cars each, operating 80 [illegible] each 78 cu. ft. loaded with cement, at a speed of 225-250 [illegible] The machinery on each road [illegible] by a three-phase induction [illegible] 440 volts, 25-cycle.

CIVIL SERVICE EXAMI[illegible] TIONS.

ENGINEMAN AND STEAM [illegible] New York, N. Y.—The U. S. Civil Service Commission announces an examination on Jan. 8, to secure eligibles from which to make certification to fill a vacancy in the position of engineman and steam [illegible] year, in the Quartermaster's Department at Large, Fort Jay, N. Y., and vacancies requiring similar qualifications as may occur in any branch of the service.

No educational test will be given, but will not be necessary for applicants to appear at any place for examination. Age limit, 20 to 50 years or over. Application Form [illegible]

CHEMIST AID.—Washington, D. C.—The U. S. Civil Service Commission announces an examination for the position of [illegible] in the Bureau of Chemistry, Department of Agriculture, at a salary of $1,000 a year. Applicants may file their applications for this position any time. These applications and the material submitted with them will be considered and rated at specified intervals to be determined by the Commission. The length of time any chemist aid may serve in this capacity in the Department is limited to two years. It is expected that vacancies in that time aids will qualify for other chemistry positions through appropriate examinations. Age limit, 20 to 30 years. Application Form 304 and special form.

GAS INSPECTORS.—New York, N. Y.—Following is the eligible list for the position of gas inspector, examination for which was held by the Municipal Civil Service Commission on Oct. 28:

Cassassa, David A., 110 West 64th St.....84.60
Levin, Harry, 233 East Eleventh St.....82.60
Fleissner, Gustav L., 246 East Fourth St.....81.40
Schweisguth, David H., 643 E. 128th St.....81.20
Tierney, James J., 461 62d St., Brooklyn.....81.20
Marshall, David T., corner Woodhull and Minnetonk Aves., Hollis, L. I.....80.80
Reinus, Bernard, 759 Jennings St., The Bronx.....78.60
Oviatt, David B., 172 West 109th St.....74.80
Faulder, Alfred J., 356 West 23d St.....74.20
Wacker, Robert A., 161 Wilson St., Brooklyn.....71.40

STEREOTYPER.—Washington, D. C.—The U. S. Civil Service Commission announces an examination on Jan. 8, to secure eligibles from which to make certification to fill a vacancy in the position of stereotyper, at 50¼ cts. per hour, in the Government Printing Office, and vacancies requiring similar qualifications as they may occur in that office. Age limit, 21 years. Application Form 1093.

LITHOGRAPHIC STONE POLISHER.—Washington, D. C.—An examination will be held on Jan. 8 by the U. S. Civil Service Commission to secure eligibles from which to make certification to fill a vacancy in the position of skilled laborer, $3 a day, in the Geological Survey, and vacancies requiring similar qualifications as they may occur in any branch of the service. Age limit, 20 years. Application Form 1093.

ELECTRICAL ASSISTANT.—Washington, D. C.—An examination will be held on Jan. 15 by the U. S. Civil Service Commission to secure eligibles from which to make certification to fill vacancies in the position of electrical assistant in the Signal Service at Large, at $900 a year each, with prospects of promotion to $1,400 a year, and vacancies requiring similar qualifications as they may occur in any branch of the service. Age limit, 20 years. Application Form 1312.

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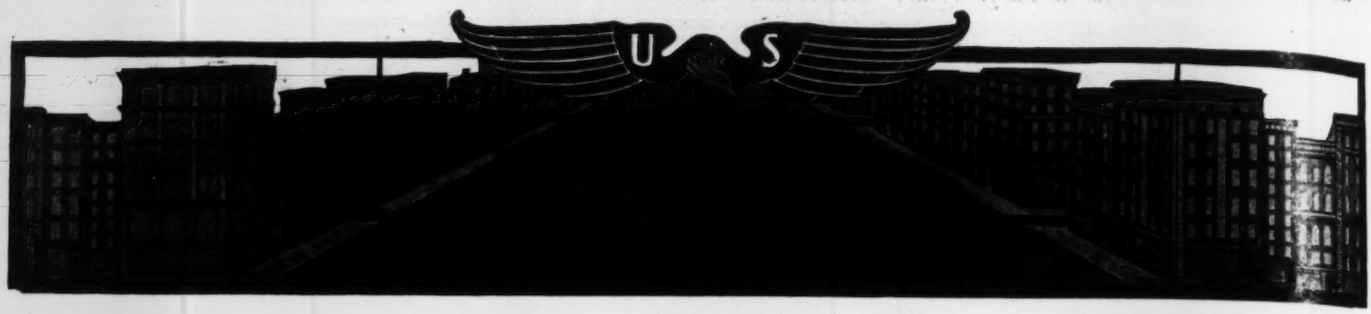

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TEREDO

¶ He has grown since he began work.

¶ When he entered the pile, where he spent his active life, his size was microscopic; but, as he bored farther and farther into the wood, he grew correspondingly.

¶ His head or boring apparatus is encased in a hard shell.

¶ Appended to his latter end will be observed two siphons, which serve a double purpose. One siphon drinks in water and the other expels sawdust. The two also serve as feelers, scenting danger. For the teredo to live, these siphons must remain in the water. Therefore, as he bores, he grows, sometimes attaining a length of over four feet.

¶ The only permanently effective pile protection is

LOCK JOINT CONCRETE PIPE

¶ It absolutely prevents initial attack upon a green pile, and, when placed around an already submerged pile, it kills within a few hours any teredos in the pile, because it prevents the siphons from reaching the water, and, in effect, suffocates the teredo.

¶ ¶ If you would like to know how Lock Joint Pipe is placed *around* the piles of a trestle or dock, without removing the deck of the structure or in any way interfering with traffic, how it will *permanently* protect the pile throughout the field of attack, how economical it is to install, inspect and maintain, *write for our Catalog.*

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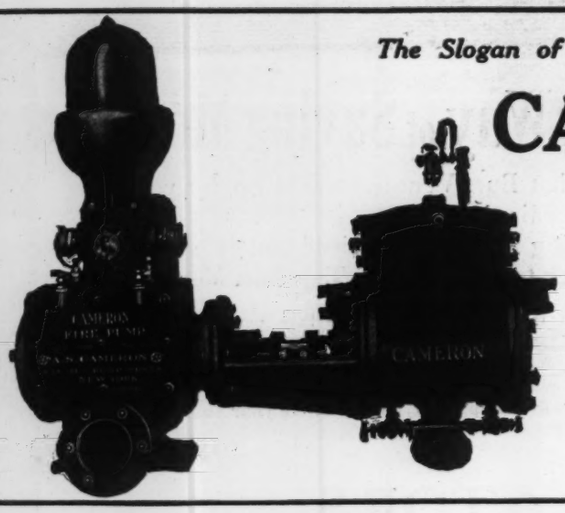

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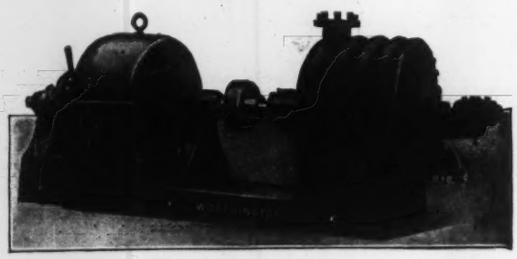

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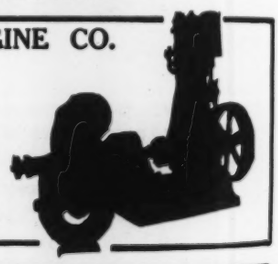

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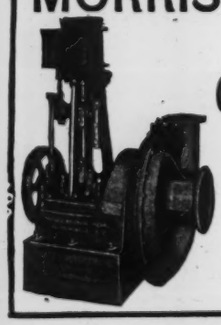

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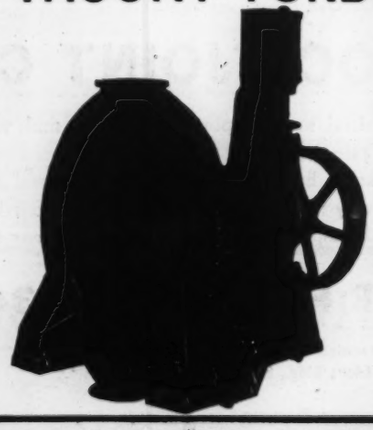

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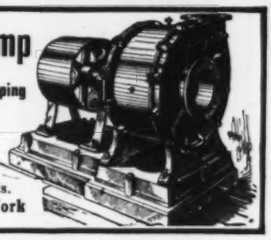

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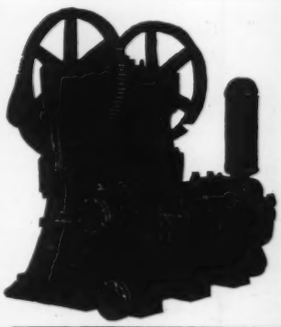

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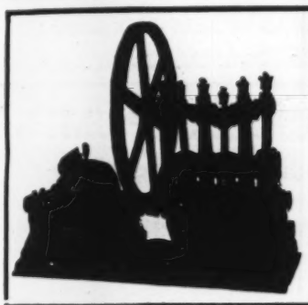

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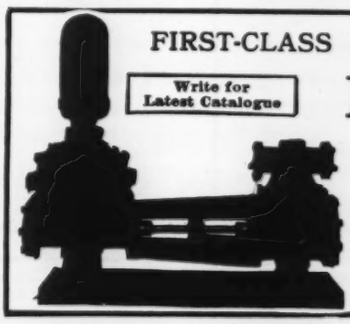

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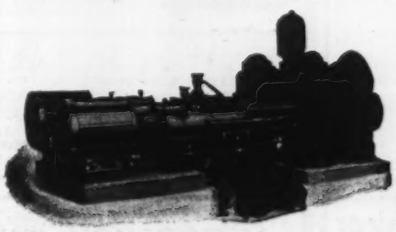

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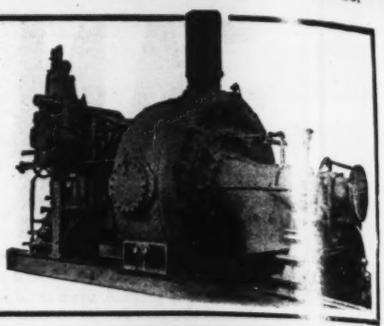

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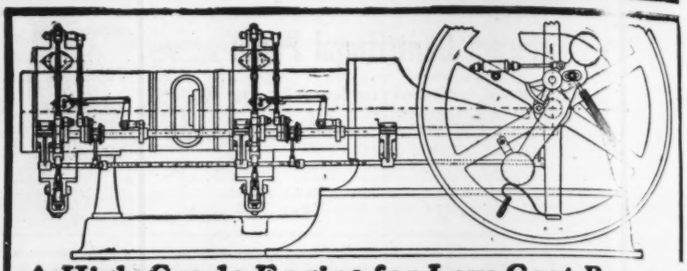

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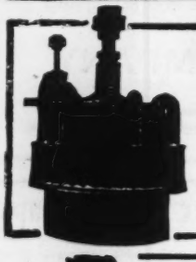

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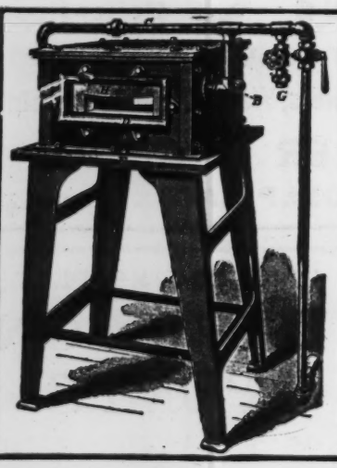

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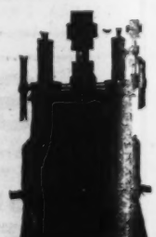

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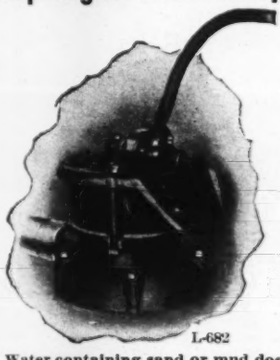

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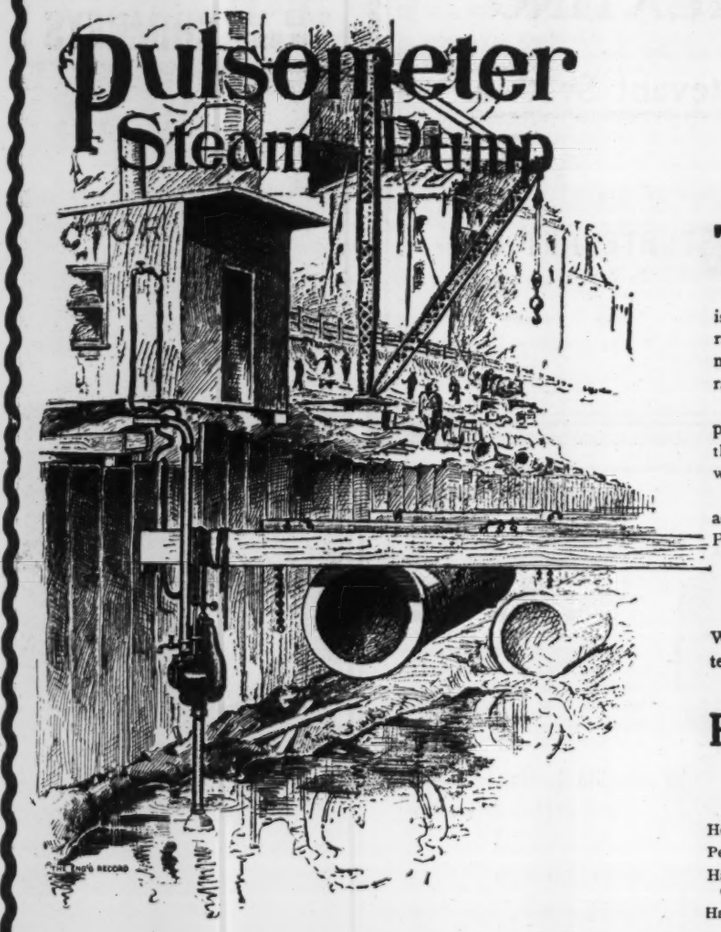

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FOLLOW THE ARROW

and you will see that the **EMERSON STEAM PUMP** is not stopped because of air entering the suction pipe.

Two types of **EMERSON** Pumps are shown in the accompanying illustration. The larger is the **"Standard,"** the smaller the **"Junior."**

If you will let your eye follow the arrow, you will observe that **two rows of strainer holes** of the "Standard" are above the surface of the water. This means that **THE SUCTION PIPE IS TAKING IN AIR IN LARGE QUANTITIES.**

Now look at the discharge pipe and note the heavy stream of water being pumped **IN SPITE** of air; which, when it enters the suction pipe of other pumps, puts them out of business until such time as the water rises above the mouth of the suction pipe.

The picture shows only the "Standard" taking in air. But the "Junior" can do the same thing and still continue to pump.

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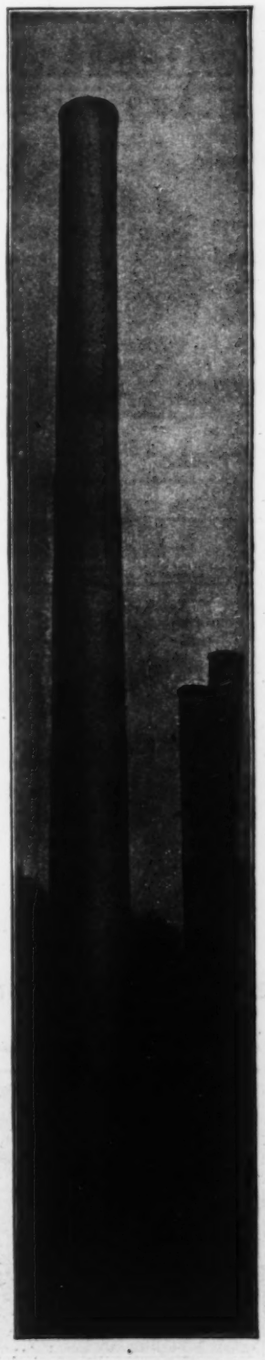

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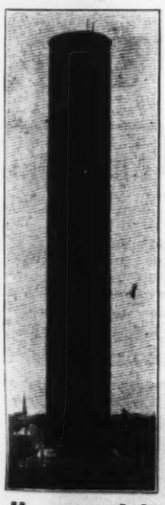

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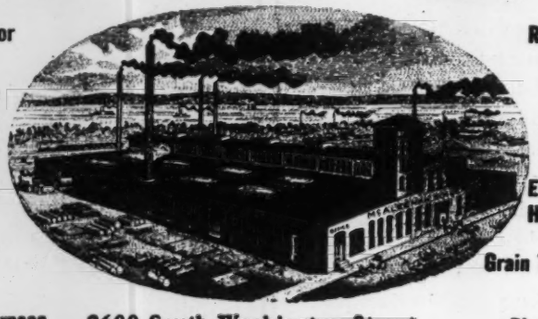

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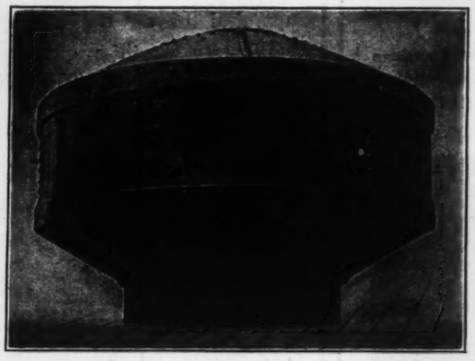

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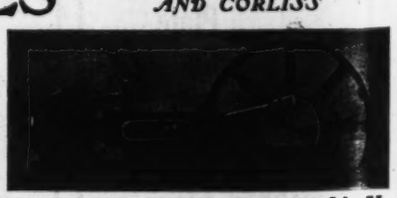

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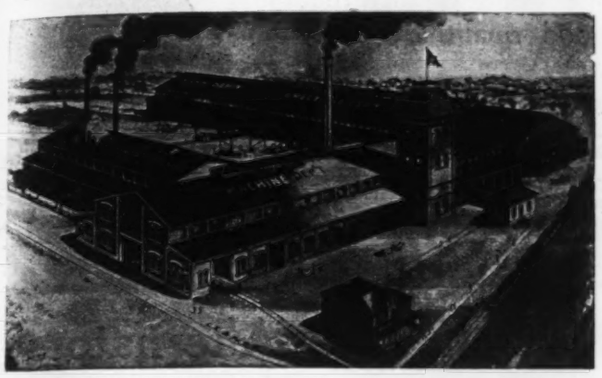

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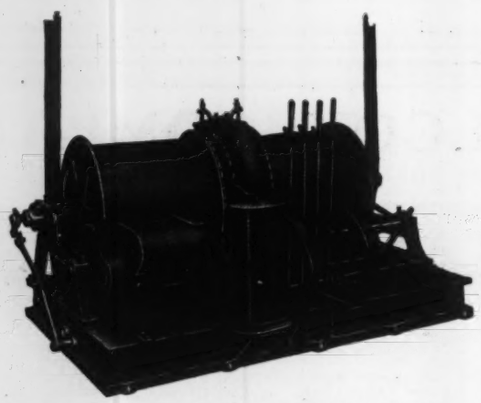

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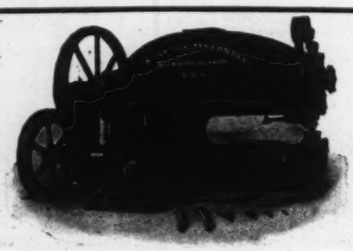

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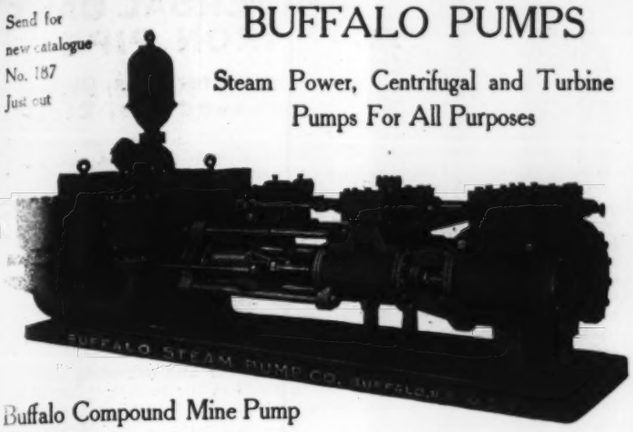

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THE JOURNAL OF THE NEW ENGLAND WATER WORKS ASSOCIATION

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WATER-WORKS STATISTICS FOR 1906; compiled by Charles W. Sherman.

COMPUTATION OF THE VALUES OF WATER POWERS, and the Damage Caused by the Diversion of Water Used for Power; by Chas. T. Main.

DAMAGE CAUSED BY THE DIVERSION OF WATER; by Clemens Herschel.

WATER RIGHTS; by Richard A. Hale.

THE SPRINGFIELD (MASS.) WATER-WORKS; by Elbert E. Lochridge.

For December, 1907, contains:

THE WALTHAM (MASS.) REINFORCED CONCRETE RESERVOIR; by Bertram Brewer.

RECENT IMPROVEMENTS TO THE WATER-WORKS AT PEABODY, MASS.; by Frank A. Barbour.

CAST-IRON PIPE SPECIFICATIONS; by Wm. R. Conard.

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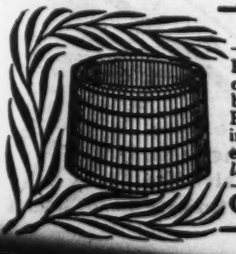

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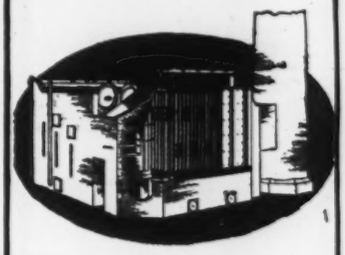

The Rational Utilization of HIGH Grade Fuels

The engineering papers are full of articles just now on the utilization as fuel of peat, lignite, soft and hard coal, slack, and various other kinds of "dirt."

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As boiler plants are ordinarily proportioned, the flue gases leave at a temperature of from 500 to 600 degrees, carrying away with them from 30% to 40% of the heating value of the coal. This is especially apt to be the case where the demand for steam has increased over what the plant was originally intended for. Such waste is unreasonable, and should be stopped.

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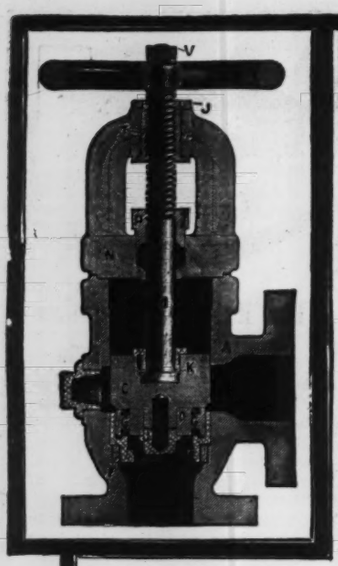

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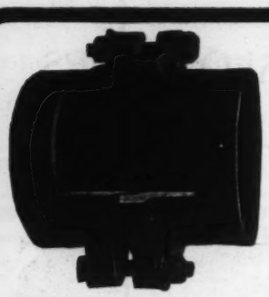

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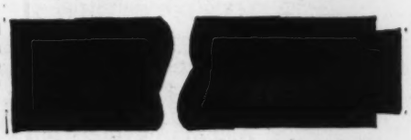

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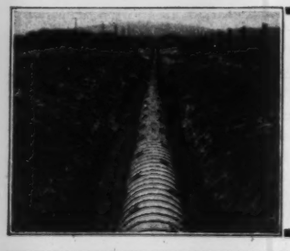

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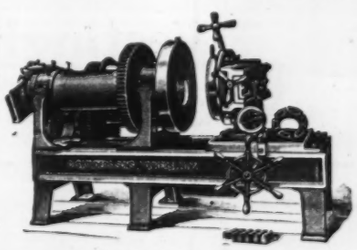

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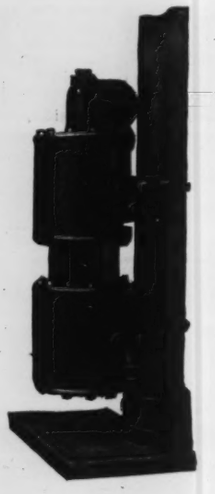

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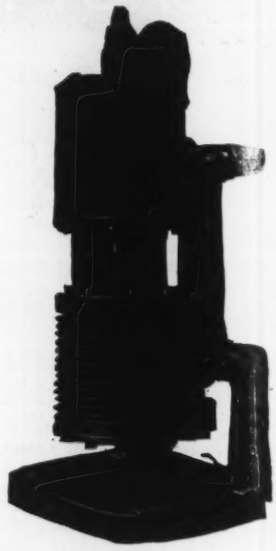

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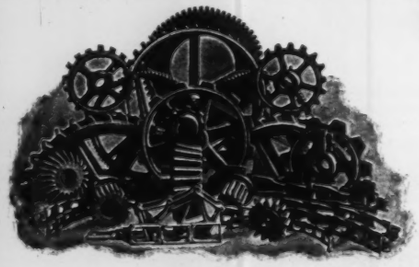

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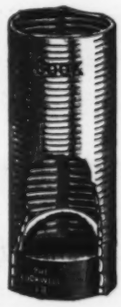

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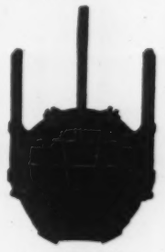

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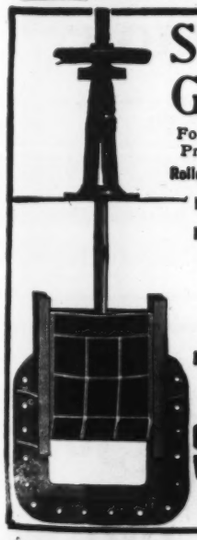

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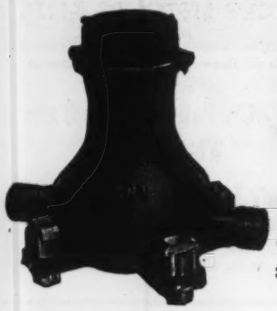

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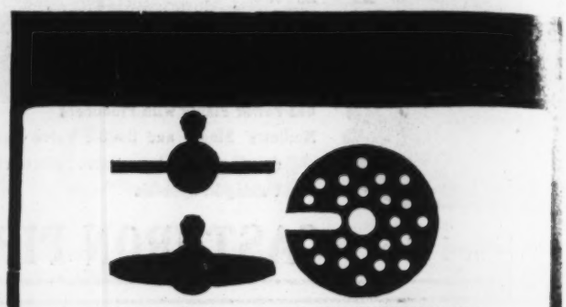

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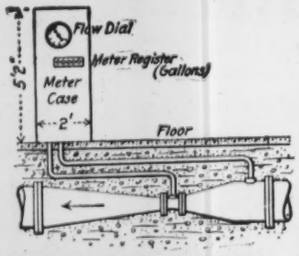

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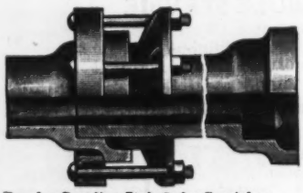

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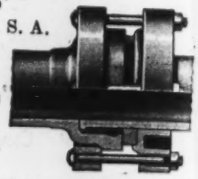

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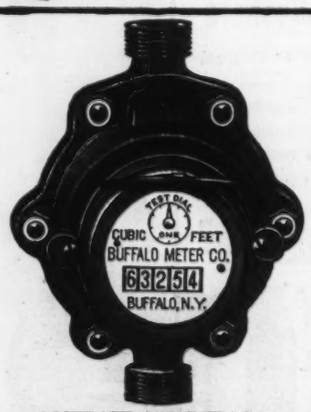

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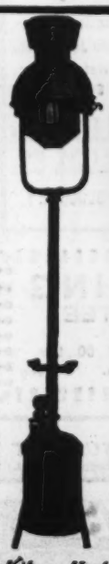

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These pictures demonstrate the fact that Sullivan Drills are simpler and have fewer working parts than other similar machines. Aside from the valve motion, the rotating mechanism of these drills deserves mention on account of its strength and durability. The rifle bar and ratchet head are milled from a single piece of tool steel and hardened in oil. The ratchet teeth are curved, engaging steel rollers, an improvement over the ordinary short-lived sharp teeth and pawls.

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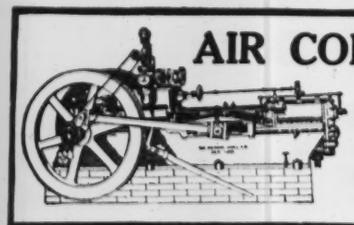

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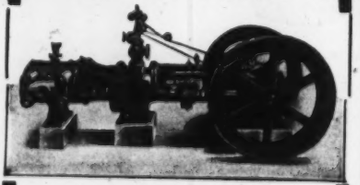

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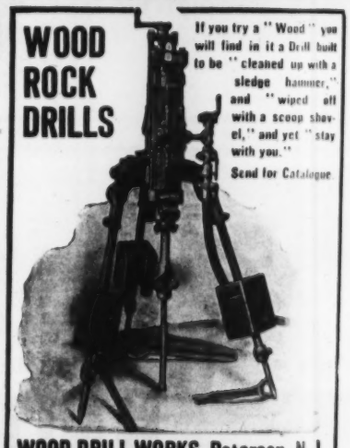

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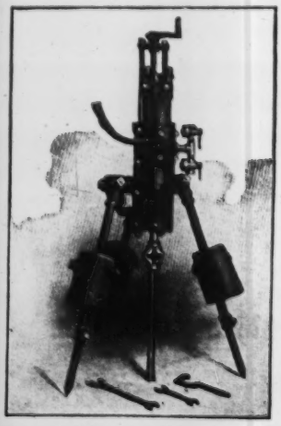

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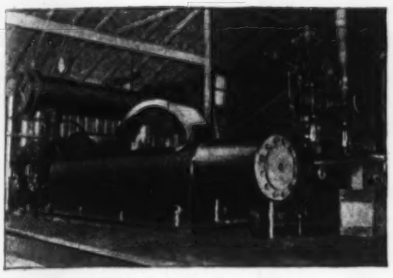

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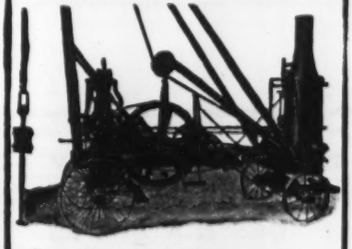

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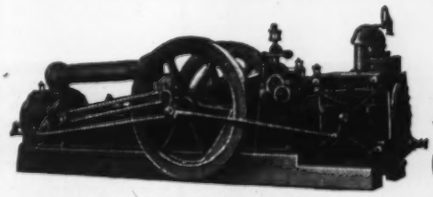

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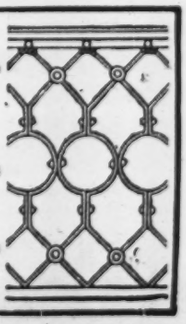

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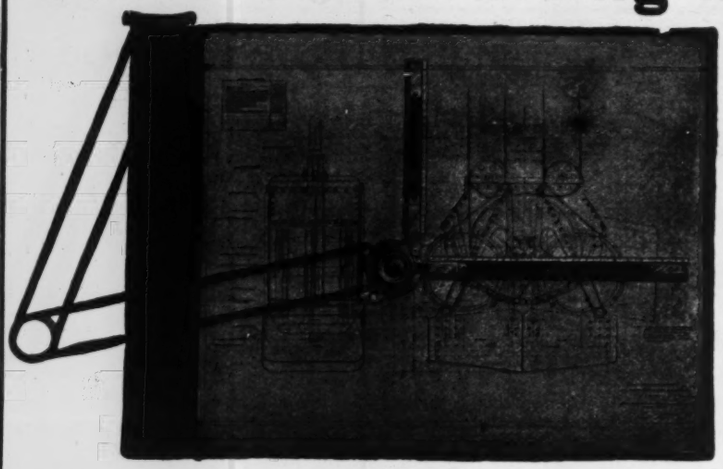

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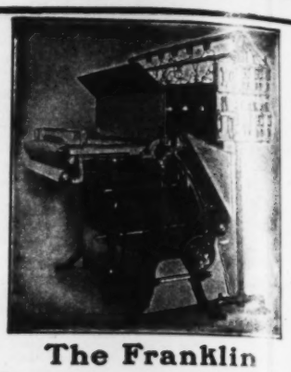

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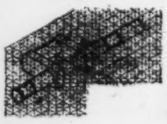

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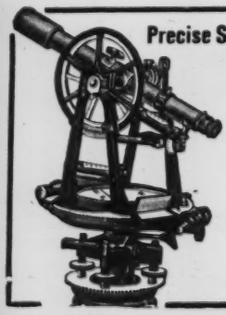

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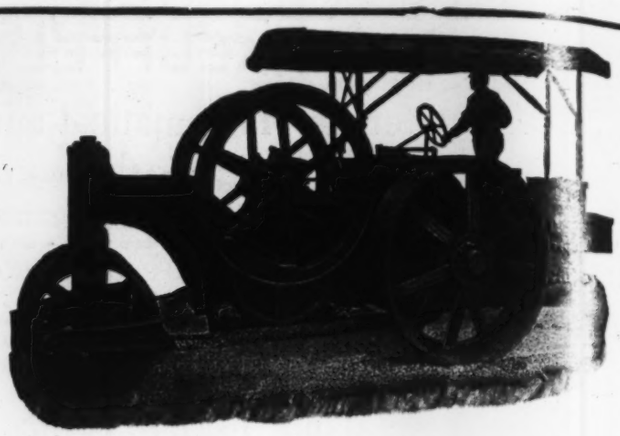

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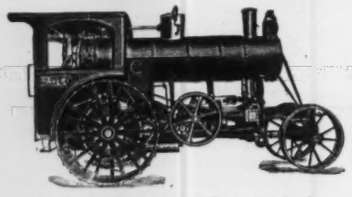

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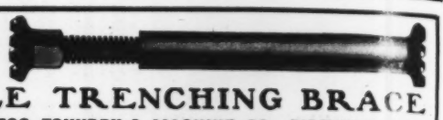

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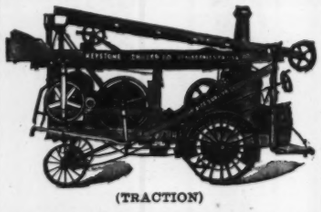

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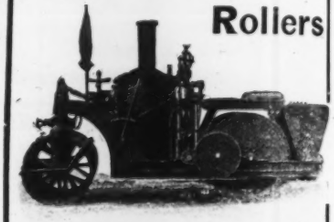

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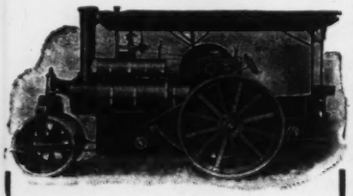

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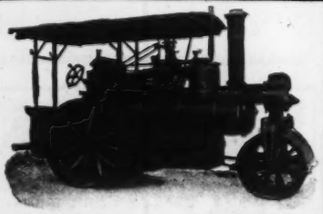

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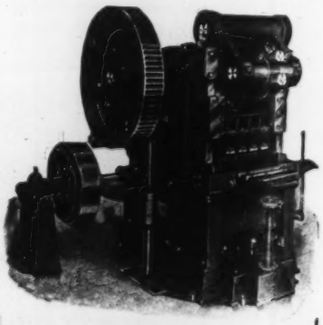

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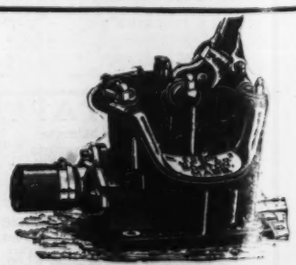

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Tomkins, Calvin, 17 Battery Place, New York.

Building Papers
Barrett Mfg. Co., New York.
Johns-Manville Co., H. W., 100 William St., N. Y.

Bumping Posts
Mechanical Mfg. Co., Chicago.

Cableways—Suspension Wire Rope
Bacon, Earle C., 26 Cortlandt St., New York.
Balanced Cable Crane Co., New York.
Beatty, M., & Sons Co., Welland, Ont.
Broderick & Bascom Rope Co., St. Louis.
Carlin's, Thos., Sons Co., Allegheny, Pa.
Carson Trench Machine Co., Boston.
Flory, S., Mfg. Co., Bangor, Pa.
Lambert Hoisting Engine Co., Newark, N. J.
Leschen, A., & Sons Rope Co., St. Louis.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Mead-Morrison Mfg. Co., Boston.
Mundy, J. S., 22 Prospect St., Newark, N. J.
N. J. Fdy. & Mach. Co., 9 Murray St., N. Y.
Robins Conveying Belt Co., New York.
Roebling's, John A., Sons Co., Trenton, N. J.
Trenton Iron Co., Trenton, N. J.
Wiener, Ernst, Co., Morris Bldg., New York.

Caissons
Builders' Iron Foundry, Providence, R. I.
East Jersey Pipe Co., Paterson, N. J.
Foundation Co., New York.
Hammond Iron Works, Warren, Pa.
McMullen, Arthur, & Co., 13 Park Row, N. Y.
O'Rourke Engineering & Const. Co., New York.
Petroleum Iron Works Co., Washington, Pa.
Pneumatic Caisson Co., Troy, N. Y.
Riter-Conley Mfg. Co., Pittsburg.
Scaife, Wm. B., & Sons Co., Pittsburg.
Sharon Boiler Works, Sharon, Pa.

Calculating Machines
Keuffel & Esser Co., New York.
Reuter, Carl H., Philadelphia.

Car Dumpers
Bergen Point Iron Works, New York.

Car Heating and Lighting
Safety Car Heating & Lighting Co., New York.

Car Couplers, Fenders, Parts, Fittings and Car Wheels
Fairbanks, Morse & Co., Chicago.
Koppel, Arthur, 68 Broad St., New York.
McConway & Torley Co., Pittsburg, Pa.
Railroad Supply Co., Chicago.
Railway Steel-Spring Co., New York.
Wiener, Ernst, Co., Morris Bldg., New York.
Wonham-Magor Engineering Works, New York.

Cars
Bacon, Earle C., Havemeyer Bldg., New York.
Browning Eng. Co., Cleveland.
Buda Foundry & Mfg. Co., Chicago.
Carlin Mchy. & Supply Co., Inc., Pittsburg, Pa.
Chattanooga (Tenn.) Car & Foundry Co.
Continental Car & Equipment Co., New York.
Dobbie Foundry & Machine Co., Niagara Falls.
Fairbanks, Morse & Co., Chicago.
Fitz-Hugh, Luther, Co., Chicago.
Good Roads Machinery Co., New York.
Hough Co., W. B., Chicago, Ill.
Hunt, C. W., Co., West Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Kilgore Peteler Co., Minneapolis, Minn.
Koppel, Arthur, 68 Broad St., New York.
Link-Belt Co., Philadelphia.
Males, The, Co., New York.
Mead Morrison Mfg. Co., Boston.
Meehan Boiler & Con. Co., Lowellville, O.
Motley, Gresh & Co., 66 Broad St., New York.
N. J. Fdy. & Mach. Co., 9 Murray St., New York.
Oliver, Wm. J. Mfg. Co., Knoxville, Tenn.
Penna. Engineering Works, New Castle, Pa.
Pressed Steel Car Co., Pittsburg.
Ramapo Iron Works, Hillburn, N. Y.
Robins Conveying Belt Co., 13 Park Row, N. Y.
Rodger Ballast Car Co., Chicago.
Stuebner Ir. Wks., 167 E. 3d St., L. I. City, N. Y.
Torbert, A. C., & Co., Chicago.
Union Iron Works, Hoboken, N. J.
Watson, Benj., New York.
Wellman-Seaver-Morgan Co., Cleveland, O.
Western Wheeled Scraper Co., Aurora, Ill.
Wiener, Ernst, Co., Morris Bldg., New York.
Wonham-Magor Engineering Co., New York.

Cars—Second-Hand (See Second-Hand Supplies and For Sale Ads.)

Cars—Tank
Fairbanks, Morse & Co., Chicago.
Fitz-Hugh, Luther, Co., Chicago.
Graver, Wm., Tank Works, East Chicago, Ind.
Petroleum Iron Works, Washington, Pa.
Reeves Brothers Co., Alliance, O.
Torbert, A. C., & Co., Chicago.

Cars—Wrecking and Ditching
Koppel, Arthur, 66 Broad St., New York.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Wiener, Ernst, Co., Morris Bldg., New York.

Carts and Wagons—Ash and Dump
Austin Mfg. Co., Chicago.
Bergen Pt. Iron Wks., New York, N. Y.
Climax Road Machine Co., Marathon, N. Y.
Columbia Wagon Co., Columbia, Pa.
Contractors' Supply & Equipment Co., Chicago.
Dobbie Fdy. & Mach. Co., Niagara Falls, N. Y.
Fairbanks, Morse & Co., Chicago.
Good Roads Machinery Co., New York.
Michigan Wagon & Mfg. Co., Jackson, Mich.
Ransome Concrete Machinery Co., New York.
Tiffin Wagon Co., Tiffin, O.
Troy Public Works Co., Utica, N. Y.
Troy Wagon Works Co., Troy, N. Y.
Watson Wagon Co., Canastota, N. Y.
Western Wheeled Scraper Co., Aurora, Ill.

Castings and Forgings—Iron—Steel
Albree Iron Works, Allegheny, Pa.
Bacon, Earle Co., 26 Cortlandt St., New York.
Belmont Iron Works, Philadelphia.
Bourne-Fuller Co., Cleveland.
Broomell, Schmidt & Steacy, York, Pa.
Buell & Mitchell, New York.
Builders' Iron Foundry, Providence, R. I.
Caldwell, H. W., & Son Co., Chicago.
Coldwell-Wilcox Co., Newburgh, N. Y.
Dimmick Pipe Co., Birmingham, Ala.
Dobbie Fdy. & Mach. Co., Niagara Falls, N. Y.
Donaldson Iron Co., Emaus, Lehigh Co., Pa.
Drummond, M. J., & Co., New York.
Fawcus Machine Co., Pittsburg.
Fox, John, & Co., 253 Broadway, New York.
Globe Fdry. Co., Port Chester, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Lake Erie Eng'g Wks., Buffalo, N. Y.
Leffel, James, & Co., Springfield, O.
Lehigh Car, Wheel & Axle Wks., Catasauqua, Pa.
Lynchburg Foundry Co., 220 Broadway, New York.
Marine Engine & Machine Co., New York.
Millar, Charles, & Son Co., Utica, N. Y.
Pennsylvania Steel Co., Steelton, Pa.
Pennsylvania Engineering Co., New Castle, Pa.
Pittsburg Mfg. Co., 28th St., Pittsburg.
Sessions Foundry Co., Bristol, Conn.
Smith, S. Morgan, Co., York, Pa.
Struthers-Wells Co., Warren, Pa.
Union Hydraulic Works, Philadelphia.
U. S. Cast Iron Pipe & Foundry Co., New York.
Vulcan Iron Works, 47 Milwaukee Ave., Chicago.
Vulcan Iron Works Co., Toledo, O.
Warren Foundry & Machine Co., New York.
Wood, R. D., & Co., 400 Chestnut St., Phila.

Cement Block Machines
American Hydraulic Stone Co., Denver, Colo.
Hydraulic Con. Mach. Co., Buffalo, N. Y.

Cement-Making Machinery
Alexander Iron Works, Syracuse, N. Y.
Atlas Dryer Co., Cleveland, O.
Austin Mfg. Co., Chicago, Ill.
Bartlett, C. O., & Snow Co., Cleveland, O.
Bonnot Co., Canton, O.
Bradley Pulverizer Co., 92 State St., Boston.
Cresson, Geo. V., Co., 141 Liberty St., New York.
Cummer, F. D., & Son Co., Cleveland, O.
Fuller Eng. Co., Allentown, Pa.
Kent Mill Co., 170 Broadway, New York.
Lehigh Car, Wheel & Axle Wks., Catasauqua, Pa.
Link-Belt Co., Philadelphia.
Power & Mining Mchy. Co., Cudahy, Wis.
Raymond Bros. Impact Pulverizer Co., Chicago.
Reeves Bros. Co., Alliance, O.
Ruggles-Coles Eng'g Co., 39 Cortlandt St., N. Y.
Smidth, F. L., & Co., 41 Cortlandt St., N. Y.
Taylor Iron & Steel Co., Highbridge, N. J.
Webster Mfg. Co., Chicago.

Cement—Natural and Portland
Alma Cement Co., Wellston, Ohio.
Alpha Portland Cement Co., Easton, Pa.
Alsen Portland Cement Co., 45 Broadway, N. Y.
American Cement Co., 42 So. 15th St., Phila.
Atlas Portland Cement Co., 30 Broad St., N. Y.
Chicago Portland Cement Co., Chicago.
Colo. Port. Cement Co., Denver, Colo.
Coplay Cement Mfg. Co., 1123 Broadway, N. Y.
Dexter Portland Cement (French, S. H.), Phila.
Edison Portland Cement Co., Philadelphia.
Empire Portland Cement Co., Warners, N. Y.
Fredenburg & Lounsbury, New York, N. Y.
French, Samuel H., & Co., Philadelphia, Pa.
Glens Falls Port. Cement Co., Glens Falls, N. Y.
Hartranft, Wm. G., Cement Co., Philadelphia.
Helderberg Cem't Co., 78 State St., Albany, N. Y.
Hudson Portland Cement Co., Hudson, N. Y.
Kosmos Portland Cement Co., Louisville, Ky.
Lawrence Cement Co., 1 Broadway, New York.
Lehigh Portland Cement Co., Allentown, Pa.
Marquette Portland Cement Co., Chicago.
Meacham & Wright, Chicago.
Penn-Allen Portland Cement Co., Allentown, Pa.
Penna. Cement Co., 26 Cortlandt St., New York.
Snyder, Hiram, & Co., 220 Broadway, New York.
St. Louis Portland Cement Co., St. Louis, Mo.
Thorn Cement Co., Buffalo, N. Y.
Universal Portland Cement Co., Chicago, Ill.
Vulcanite Portland Cement Co., Philadelphia.
Warner, Chas., Co., Wilmington, Del.

Cement Waterproofing
Toch Bros., 220 Fifth Ave., New York.
Winslow Co., E. J., Chicago.

Chain Blocks
Yale & Towne Mfg. Co., New York.

Checks—Time and Merchandise
American Railway Supply Co., 24 Park Pl., N. Y.

Chemical Laboratories (See Professional Card Page)

Chimneys—Brick and Concrete
Concrete Con. Co., Philadelphia, Pa.
Custodis Chimney Const. Co., Bennett Bldg., N. Y.
Goff, Horner & Co., Pittsburg, Pa.
Kellogg Co., M. W., New York.
National Dry Kiln Co., Indianapolis.
Weber Steel Concrete Chimney Co., Chicago.
Wiederholt Con. Co., St. Louis, Mo.
Wuerz, E., Kiln & Chimney Con. Co., Brklyn, N. Y.

Chimneys—Iron and Steel (See Boilers)

Chutes—Mail
Cutler Mfg. Co., Rochester, N. Y.

Clutches
Cutler Hammer Clutch Co., Milwaukee, Wis.
National Brake & Clutch Co., Boston, Mass.

Coal and Ore Handling and Conveying Machinery, Etc.
Atlas Dryer Co., Cleveland, O.
Bacon, Earle C., 26 Cortlandt St., New York.
Bartlett, C. O., & Snow Co., Cleveland, O.
Beatty, M., & Sons, Welland, Ont.
Beaumont, R. H., Co., Philadelphia.
Bergen Pt. Iron Wks., New York, N. Y.
Berquist, A. S., 515 Bedford Ave., Brklyn, N. Y.
Broderick & Bascom Rope Co., St. Louis.
Browning Engineering Co., Cleveland, O.
Brown Hoisting Machinery Co., Cleveland, O.
Chain Belt Co., Milwaukee.
Conveying Weigher Co., New York.
Dodge Coal Storage Co., Philadelphia.
Gandy Belting Co., Baltimore, Md.
Guarantee Con. Co., New York.
Hayward Co., 97 Cedar St., New York.
Hunt, C. W., Co., Mapleton, S. I., N. Y.
Industrial Works, Bay City, Mich.
Jeffrey Mfg. Co., Columbus, O.
Koppel, Arthur, 66 Broad St., New York.
Lambert Hoisting Engine Co., Newark, N. J.
Lidgerwood Mfg. Co., 56 Liberty St., New York.
Link-Belt Co., Philadelphia.
Mead-Morrison Mfg. Co., Cambridgeport, Mass.
Minn. Steel & Machinery Co., Minneapolis, Minn.
Mundy, J. S., 22 Prospect St., Newark, N. J.
National Hoisting Engine Co., Harrison, N. J.
N. J. Fdy. & Mach. Co., 9 Murray St., N. Y.
Robins Conveying Belt Co., 13-21 Park Row, N. Y.
Rodger Ballast Car Co., Chicago.
Sturtevant Co., B. F., Hyde Park, Mass.
Vulcan Iron Works, Wilkes-Barre, Pa.
Webster Mfg. Co., Chicago.
Wellman-Seaver-Morgan Co., Cleveland, O.
Wiener, Ernst., Co., Morris Bldg., New York.
Wonham & Magor, New York.

Cocks (See Valves and Hydrants)
Computing Machines
Keuffel & Esser Co., New York.
Reuter, Carl H., Philadelphia.

Concrete Mixers and Machinery
Austin Mfg. Co., Chicago, Ill.
Bergen Point Iron Works, New York.
Carlin Mchy & Supply Co., Inc. Pittsburg, Pa.
Cockburn Barrow & Machine Co., New York.
Contractors' Supply & Equipment Co., New York.
Drake Standard Machine Co., Chicago.
Eureka Machy. Co., Lansing, Mich.
Hains Concrete Mixer Co., Washington, D. C.
Hough Co., W. B., Chicago, Ill.
Huffman & Co., R. C., Baltimore, Md.
Internat'l Fence & Fireproofing Co., Columbus, O.
Koehring Machine Co., Milwaukee, Wis.
Link-Belt Co., Philadelphia.
McKelvey Concrete Machinery Co., Chicago.
Municipal Engineering & Contracting Co., Chicago.
Ransome Concrete Machinery Co., New York.
Scholl, Julian, & Co., New York.
Wilcox, W. H., & Co., Binghamton, N. Y.

Concrete Work (See Contractors and Fireproof Construction)

Condensers
C. H. Wheeler Mfg. Co., Philadelphia, Pa.

Conduits—Creosoted Wood (See Creosoting)

Conduits—Fibre
Fibre Conduit Co., Orangeburg, N. Y.

Conduits—Vitrified Clay
Blackmer & Post Pipe Co., St. Louis.
Bond, Harold L., & Co., 140 Pearl St., Boston.
Dickey Clay Mfg. Co., Kansas City, Mo.
Evans & Howard Fire-Brick Co., St. Louis.
Gest, G. M., 277 Broadway, New York.

Contractors (See also Bridges)
Ambursen Hydraulic Const. Co., Boston.
Abbot-Gamble Co., New York.
American Pipe Mfg. Co., 112 N. Broad St., Phila.
Atlantic, Gulf & Pacific Co., New York.
Atlas Dryer Co., Cleveland, O.
Austin Drainage Excavator Co., F. C., Chicago.
Barber Asphalt Paving Co., Philadelphia.
Bates & Rogers Constr. Co., Chicago.
Beard Dredging Co., New York.
Briggs, J. Marvin, 17 Battery Pl., New York.
Buell & Mitchell, New York.
Cook Well Co., St. Louis, Mo.
Eastern Construction Co., Brooklyn, N. Y.
Ferguson Contr. Co., Pittsburg.
Foundation Co., 37 Nassau St., New York.
General Fireproofing Co., Youngstown, O.
Gest, G. M., 277 Broadway, New York.
Gilbreth, Frank B., 34 W. 26th St., New York.
Gillespie, T. A., Co., Pittsburg.
Goff, Horner & Co., Pittsburg, Pa.
Holmes, A. L., Grand Rapids, Mich.
Lewis & Kitchen, 433 Wabash Ave., Chicago.
McArthur Bros., Chicago, Ill.
McGrath, M. F., Easton, Pa.
McMullen, Arthur, & Co., Park Row Bldg., N. Y.
Missouri Valley Br. & Ir. Co., Leavenworth, Kan.
Morava Construction Co., Chicago.
Municipal Engineering & Contracting Co., Chicago.
Naughton Co., 299 Broadway, New York.
North American Dredging Co., San Francisco.
O'Rourke Engineering Const. Co., New York.
Puget Sound Bridge & Dredg. Co., Seattle, Wash.
Phillips & Worthington, 136 Liberty St., N. Y.
Shoemaker, Lewis F., & Co., Philadelphia.
S. R. Smythe & Co., Pittsburg, Pa.
Snare & Triest, 39 Cortlandt St., New York.
Southwestern Bridge Co., Joplin, Mo.
Stone & Webster, Boston.
Structural Concrete Co., New York.
Troy Public Works Co., Utica, N. Y.
Trussed Concrete Steel Co., Detroit, Mich.
Tucker & Vinton, Inc., 156 Fifth Ave., New York.
Turner Construction Co., New York.
Turner-Forman Co., Philadelphia.
United Engineering & Contracting Co., New York.
White, J. G., & Co., New York.

Converters and Cooling Towers
Alberger Condenser Co., 95 Liberty St., New York.
Davidson Co., M. T., New York.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Epping Carpenter Co., Pittsburg, Pa.
Graver, Wm., Tank Works, East Chicago, Ind.
Meehan Boiler & Const. Co., Lowellville, O.
Petroleum Iron Works Co., Washington, Pa.
Penna. Engineering Works, New Castle, Pa.
Pittsburg (Pa.) Ind. Iron Works.
Reeves Bros. Co., Alliance, O.
Ritter-Conley Mfg. Co., Pittsburg, Pa.
Southwark Foundry & Machine Co., Philadelphia.
Southwestern Bridge Co., Joplin, Mo.
Wellman-Seaver-Morgan Co., Cleveland, O.
Wheeler, C. H., Mfg. Co., Philadelphia.

Conveyors and Conveying Machinery (See Coal and Ore Handling)

Cornices
Berger Mfg. Co., Canton, O.
General Fireproofing Co., Youngstown, O.
Irwin, Thos. W., Mfg. Co., Allegheny, Pa.
E. Van Noorden Co., Boston, Mass.

Countershafts
Buffalo Forge Co., Buffalo, N. Y.
Sullders' Iron Foundry, Providence, R. I.
Cresson, Geo. V., 141 Liberty St., New York.
Deming Co., Salem, O.
New Flexible Shaft Co., Philadelphia.
Sturtevant, B. F., Co., Hyde Park, Mass.

Couplings—Friction Clutch
Brown Hoisting Machinery Co., Cleveland, O.
Browning Engineering Co., Cleveland, O.
Caldwell, H. W., & Son Co., Chicago.
Cresson, Geo. V., 141 Liberty St., New York.
Cutler Hammer Clutch Co., Milwaukee, Wis.
Fairbanks, Morse & Co., Chicago.
Poole Engineering & Machine Co., Baltimore.
Smith, S. Morgan, York, Pa.

Cranes and Hoists
American Hoist & Derrick Co., St. Paul, Minn.
Bacon, Earle C., Havemeyer Bldg., New York.
Beatty, M., & Sons, Welland, Ont.
Bergen Pt. Iron Wks., New York, N. Y.
Boston Bridge Co., 47 Winter St., Boston.
Brown Hoisting Machinery Co., Cleveland, O.
Browning Engineering Co., Cleveland, O.
Byers, John F., Machine Co., Ravenna, O.
Dobbie Fdy. & Mach. Co., Niagara Falls, N. Y.
Dodge Coal Storage Co., Philadelphia.
Gen. Pneumatic Tool Co., Montour Falls, N. Y.
Hayward Co., 97 Cedar St., New York.
Hoisting Machinery Co., New York.
Industrial Works, Bay City, Mich.
Ingersoll-Rand Co., New York.
Interstate Engineering Co., Bedford, O.
Lambert Hoisting Engine Co., Newark, N. J.
Lidgerwood Mfg. Co., New York.
Link-Belt Co., Philadelphia.
Marion Steam Shovel Co., Marion, O.
McMyler Mfg. Co., Cleveland, O.
N. J. Foundry & Machine Co., New York.
Parker Hoist & Mchy. Co., Chicago, Ill.
Pawling & Harnischfeger, Milwaukee, Wis.
Robins Conveying Belt Co., New York.
Sprague Electric Co., 531 W. 34th St., New York.
Torbert, A. C., Co., Chicago.
Terry & Tench, New York.
Wellman-Seaver-Morgan Co., Cleveland, O.
Williamson Bros. Co., Philadelphia.

Crayons and Pencils (See Engineers' Supplies)

Creosoting
Am. Creosoting Co., 29 Broadway, New York.
American Creosote Works, New Orleans, La.
Atlantic Creo. & Wood Pres'v'g Wks., Norfolk, Va.
Barber Asphalt Paving Co., Philadelphia.
C. A. Mfg. Co., Austin, Tex.
Eppinger & Russell Co., 66 Broad St., New York.
Gulfport Creosoting Co., Gulfport, La.
Intern't'l Creo. & Const. Co., Galveston, Tex.
Michigan Pipe Co., Bay City, Mich.
McKinney Co., C. S., 60 Wall St., New York.
National Wood Pipe Co., Los Angeles, Cal.
New Orleans (La.) Wood Preserving Works.
Norfolk Creosoting Co., Norfolk, Va.
San Francisco (Cal.) Timber Preserving Co.
Southern Creosoting Co., Slidell, La.
U. S. Wood Preserving Co., New York.
West Pascagoula (Miss.) Creosoting Works.
Wyckoff Pipe & Creosoting Co., Stamford, Conn.

Crossings—Railway (See Frogs)

Crushers and Pulverisers
Bacon, Earle C., 26 Cortlandt St., New York.
Bartlett, C. O., & Snow Co., Cleveland, O.
Jeffrey Mfg. Co., Columbus, O.
Lehigh Car Wheel & Axle Wks., Catasauqua, Pa.
Link-Belt Co., Philadelphia.
Power & Mining Mchy. Co., Cudahy, Wis.
Raymond Bros. Impact Pulveriser Co., Chicago.
Robins Conveying Belt Co., 13-21 Park Row, N. Y.
Julian Scholl & Co., New York.
Taylor Iron & Steel Co., Highbridge, N. J.
Vulcan Iron Works, Wilkes-Barre, Pa.

Cupolas—Foundry
Meehan Boiler & Const. Co., Lowellville, O.
Petroleum Iron Works, Washington, Pa.
Reeves Bros. Co., Alliance, O.
Stuebner Iron Works, Long Island City, N. Y.

Curb Boxes and Molds
Bourbon Copper & Brass Works, Cincinnati, O.
Builders' Iron Foundry, Providence, R. I.
Darling Pump & Mfg. Co., Williamsport, Pa.
Steel Protected Concrete Co., Philadelphia, Pa.

Dams—Concrete Steel and Cofferdam
Ambursen Hydraulic Construction Co., Boston.
Foundation Co., New York.

Derails
Hayes Track App. Co., Geneva, N. Y.

Derricks and Derrick Fittings and Hoisting Machinery (See also Coal and Ore Handling)
American Hoist & Derrick Co., St. Paul, Minn.
Baltimore Bridge Co., Baltimore.
Beatty, M., & Sons, Welland, Ont.
Bergen Pt. Iron Wks., New York, N. Y.
Broderick & Bascom Rope Co., St. Louis.
Browning Engineering Co., Cleveland, O.
Byers, John F., Machine Co., Ravenna, O.
Carlin Mchy & Supply Co., Inc. Pittsburg, Pa.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Carson Trench Machine Co., Boston, Mass.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Contractors' Supply & Equipment Co., Chicago.
Dobbie Fdy. & Mach. Co., Niagara Falls, N. Y.
Flory, S., Mfg. Co., Bangor, Pa.
Hayward Co., The, 97 Cedar St., New York.
Industrial Works, Bay City, Mich.
Lambert Hoisting Engine Co., Newark, N. J.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Mundy, J. S., 22 Prospect St., Newark, N. J.
National Hoisting Engine Co., Harrison, N. J.
N. J. Fdy. & Mach. Co., 9 Murray St., N. Y.
Parker Hoist & Mchy. Co., Chicago, Ill.
Pawling & Harnischfeger, Milwaukee, Wis.
Terry & Tench, New York.

Ditching Machinery, Steam Shovels, Etc.
American Hoist & Derrick Co., St. Paul, Minn.
Atlantic Equipment Co., New York.
Atlantic, Gulf & Pacific Co., New York.
Austin Mfg. Co., Chicago.
Beatty, M., & Sons Co., Welland, Ont.
Bond, Harold L., & Co., 240 Pearl St., Boston.
Briggs, J. Marvin, 17 Battery Pl., New York.
Brown Hoisting Machinery Co., Cleveland, O.
Browning Engineering Co., Cleveland, O.
Buckeye Traction Ditcher, Findlay, O.
Bucyrus Co., South Milwaukee, Wis.
Carson Trench Machine Co., Boston.
Dunn Mfg. Co., Pittsburg, Pa.
Ellicott Machine Co., Baltimore, Md.
Fairbanks Steam Shovel Co., Marion, O.
Fitz-Hugh, Luther, Co., Chicago.
Flory, S., Mfg. Co., Bangor, Pa.
Hayward Co., 97 Cedar St., New York.
Industrial Works, Bay City, Mich.
Ingersoll-Rand Co., New York.
Kalamazoo (Mich.) Fdy. & Machine Co.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Males, The, Co., New York.
Marion Steam Shovel Co., Marion, O.
McMyler Mfg. Co., Cleveland.
Millar, Charles, & Son Co., Utica, N. Y.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Municipal Engineering & Contracting Co., Chicago.
North American Dredging Co., San Francisco.
Osgood Dredge Co., Albany, N. Y.
Parker Hoist & Mchy. Co., Chicago, Ill.
Parsons Co. G. W., Newton, Iowa.
Souther, John, & Co., 185 Summer St., Boston.
Toledo Foundry & Machine Co., Toledo, O.
Torbert, A. C., & Co., Chicago
Troy Public Works Co., 1154 St. Nicholas Ave., New York.
Vulcan Iron Works, Chicago.
Vulcan Iron Works, Toledo, O.
Watson, Benj., New York.
Western Wheeled Scraper Co., Aurora, Ill.

Diving Apparatus
Falcon, Jos. G., Evanston, Ill.
Morse, A. J., & Son, 221 High St., Boston.
Shrader's, A., Son, 32 Rose St., New York.

Doors and Shutters
Kinnear Mfg. Co., Columbus, O.
Wilson, J. G., Mfg. Co., New York.

Dredges (See Ditching Machinery)

Dredging Contractors (See Contractors)

Drills—Rock and Ore
American Air Compressor Works, New York.
Austin Mfg. Co., Chicago.
Beatty, M., & Sons, Welland, Ont.
Cyclone Drill Co., Orrville, O.
Dallett, Thos. H., Co., Philadelphia.
Dobbie Fdy. & Mach. Co., Niagara Falls, N. Y.
Ingersoll-Rand Co., New York.
Jeffrey Mfg. Co., Columbus, O.
Keystone Driller Co., Box H, Beaver Falls, Pa.
Marvin Electric Drill Co., Binghamton, N. Y.
McKiernan Drill Co., 170 Broadway, New York.
Star Drilling Machine Co., Akron, O.
Stow Flexible Shaft Co., Philadelphia.
Sullivan Machinery Co., Chicago.
Stow Mfg. Co., Binghamton, N. Y.
Wickes Bros., Jersey City, N. J.
Wood Drill Works, Paterson, N. J.

Dryers and Drying Apparatus
Am. Blower Co., Detroit, Mich.
American Process Co., 62 William St., N. Y.
Atlas Dryer Co., Cleveland, O.
Bartlett, C. O., & Snow Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Cummer, F. D., & Son Co., Cleveland, O.
Fuller Eng. Co., Allentown, N. J.
Jeffrey Mfg. Co., Columbus, O.
Kent Mill Co., 170 Broadway, N. Y.
Ruggles-Coles Engineering Co., New York.
Sturtevant, B. F., Co., Hyde Park, Mass.
U. S. Drying Engineering Co., New York.
Smidth, F. L., & Co., 41 Cortlandt St., N. Y.

Dumping Beds
Black Mfg. Co., Chicago, Ill.

Dynamite, Explosives, Exploders
Aetna Powder Co., Chicago, Ill.
Bond, Harold L., & Co., 240 Pearl St., Boston.
Contractors' Supply & Equipment Co., Chicago.
Keystone Powder Mfg. Co., Emporium, Pa.
Nat'l Powder Co., 8th Ave. & 34th St., N. Y. C.
Sinnamahoning Powder Mfg. Co., Emporium, Pa.

Economizers (See Fuel Economizers)

Electrical Machinery, Dynamos, Etc.
C. & C. Electric Co., New York.
Crocker-Wheeler Co., Ampere, N. J.
Dallett, Thos. H., & Co., Philadelphia.
Ft. Wayne Electric Works, Ft. Wayne, Ind.
General Electric Co., Schenectady, N. Y.
Sprague Electric Co., New York.
Stow Flexible Shaft Co., Philadelphia.
Sturtevant, B. F., Co., Hyde Park, Mass.
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.
Wickes Bros., New York.

Elevators—Coal, Rock and Ore (See Coal and Ore Handling)

Elevators—Freight and Passengers
Fairbanks, Morse & Co., Chicago.
Marine Engine & Machine Co., New York.

Elevators—Grain Storage
Baltimore Bridge Co., Baltimore.
Bartlett, C. O., & Snow Co., Cleveland, O.
Berquist, A. S., Brooklyn, N. Y.
Caldwell, H. W., & Son Co., Chicago.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Co., Philadelphia.
Petroleum Iron Works, Washington, Pa.
Reeves Brothers Co., Alliance, O.
Steel Storage & Elev. Const. Co., Buffalo, N. Y.
Webster Mfg. Co., Chicago.

Employment Bureaus
American School of Correspondence, Chicago.
Cleveland Engineering Agency, Cleveland, O.
Engineering Agency, Chicago, Ill.
Hapgood's, 309 Broadway, New York.
International Correspondence Schools, Scranton, Pa.
Labor Inf. Office for Italians, New York.
New York Engineering Agency, New York.

Engineers—Civil, Consulting and Mechanical (See Professional Card Pages)

Engineers' Supplies, Instruments, Clocks, Etc.
Ainsworth, Wm., & Sons, Denver, Colo.
Alexander, Clinton B., Clearfield, Pa.
Alteneder, T., & Sons, Philadelphia.
Amer. Drafting Furniture Co., Rochester, N. Y.
Architects' & Eng'rs' Sup. Co., Kansas City, Mo.
Berger, C. L., & Sons, Boston.
Brandis, F. E., Sons & Co., Brooklyn, N. Y.
Buff & Buff Mfg. Co., Boston.
Cardinell-Vincent Co., Oakland, Cal.
Chicago Blue Print Paper Co., Chicago.
Chicago Steel Tape Co., Chicago.
Dietzgen, Eugene, Co., 181 Monroe St., Chicago.
Elliott, B. K., Co., Pittsburg, Pa.
Gurley, W. & L. E., Troy, N. Y.
Hardtmuth, L. & C., New York.
Heller & Brightly, Philadelphia.
Higgins & Co., C. M., Brooklyn, N. Y.
Howard Watch Co., E. Waltham, Mass.
Kelly, John E., Seattle, Wash.
Kelsey, D. J., New Haven, Conn.
Keuffel & Esser Co., 127 Fulton St., New York.
Kolesch & Co., 138 Fulton St., New York.
Ledder & Probst, 287 Washington St., Boston.
Lietz Co., A., San Francisco, Cal.
Lufkin Rule Co., Saginaw, Mich.
Mittineague Paper Co., Mittineague, Mass.
Pfister, Herm., 428 Plum St., Cincinnati, O.
Pitts. Instrument & Mach. Co., Pittsburg, Pa.
Prince, L. M., Cincinnati, O.
Queen & Co., 1010 Chestnut St., Philadelphia.
Ruehle, E. G., & Sons, 108 Fulton St., New York.
Soltman, E. G., New York.
Stackpole & Bro., 29 Fulton St., New York.
Stieren Co., W. B., Pittsburg, Pa.
St. George, H. V., New York.
Surveyors' Instrument Exchange, Philadelphia.
Ulmer, J. C., & Co., Cleveland, O.
Universal Drafting Machine Co., Cleveland, O.
Weber, F., & Co., Philadelphia.
Williams, Brown & Earle, Philadelphia.
A. Wissler Inst. Wks., St. Louis, Mo.
Wittstock, P. & R., Berlin, Germany.
Young & Sons, Philadelphia.

Engines—Gas, Gasoline and Oil
Abenaque Machine Works, Westminster Sta., Vt.
Atlas Engine Works, Indianapolis.
Backus Water Motor Co., Newark, N. J.
Cyclone Drill Co., Orrville, O.
Fairbanks, Morse & Co., Chicago.
Marine Engine & Machine Co., New York.
Mietz, A., 128-138 Mott St., New York.
National Meter Co., 84 Chambers St., New York.
New Era Iron Works, 37 Dale Ave., Dayton, O.
Otto Gas Engine Work, Philadelphia.
Thompson & Sons Mfg. Co., Beloit, Wis.

Engines—Hoisting
American Hoist & Derrick Co., St. [illegible], Minn.
Bacon, Earle C., 26 Cortlandt St., N[illegible] York.
Beatty, M., & Sons, Welland, Ont.
Brown Hoisting Machinery Co., Cleve[illegible] O.
Byers, John F., Machine Co., Rave[illegible] O.
Carlin's, Thomas, Sons Co., Allegh[illegible] Pa.
Carlin Mchy & Supply Co., Inc. Pitt[illegible] Pa.
Channon, H., Co., Chicago, Ill.
Contractors' Plant Mfg. Co., Buffalo, [illegible]
Dake Eng. Co., Grand Haven, Mich.
Dobbie Fdy. & Mach. Co., Niagara F[illegible] N. Y.
Flory, S., Mfg. Co., Bangor, Pa.
Green Co., L. A., Pittsburg, Pa.
Hoisting Machinery Co., New York
Hunt, C. W., Co., West New Bright[illegible] Y.
Industrial Works, Bay City, Mich.
Lambert Hoisting Engine Co., Newark
Lidgerwood Mfg. Co., 96 Liberty St., [illegible] York.
Mead-Morrison Mfg. Co., Cambridge, M[illegible]
Minn. Steel & Machin'y Co., Minneapo[illegible] Minn.
Mundy, J. S., 22 Prospect St., Newark
National Hoist Eng. Co., Harrison, N[illegible]
Parker Hoist & Mchy. Co., Chicago, I[illegible]
Stroudsburg Engineering Co., Stroud[illegible] Pa.
Vulcan Iron Works Co., Toledo, O.
Vulcan Iron Works, Wilkes-Barre, Pa.
Watson, Benj., New York.
Wellman-Seaver-Morgan Co., Cleveland, [illegible]
Wickes Bros., New York.

Engines—Stationary and Pump[illegible]
Am. Blower Co., Detroit, Mich.
Atlas Engine Works, Indianapolis.
Austin Mfg. Co., Chicago.
Bond, Harold L., & Co., 240 Pearl St., B[illegible]
Builders' Iron Foundry, Providence, R[illegible]
Buffalo Forge Co., Buffalo, N. Y.
Cameron, A. S., Steam Pump Works, Ne[illegible] York.
Cook Well Co., St. Louis.
Davidson Co., M. T., New York.
Dayton Hydraulic Machine Co., Dayton
De Laval Steam Turbine Co., Trenton, [illegible] J.
Dean Bros.' Steam Pump Wks., Indianapo[illegible] Ind.
Downie Pump Co., Downieville, Pa.
Edwards, Joseph, & Co., 414 Water St., N[illegible]
Emerson Steam Pump Co., Alexandria, Va.
Epping-Carpenter Co., Pittsburg, Pa.
Erie Pump & Engine Co., Erie, Pa.
Fairbanks, Morse & Co., Chicago.
Granger, A. D., Co., New York.
Green Co., L. A., Pittsburg, Pa.
Harris Air Pump Co., Indianapolis, Ind.
Ide, A. L., & Sons, Springfield, Ill.
International Steam Pump Co., New York
Jeanesville Iron Wks. Co., Hazleton, Pa.
Lawrence Pump & Engine Co., Lawrence, Mass.
Leffel, James, & Co., Springfield, O.
Marine Engine & Machine Co., New York.
McGowan John H., Co., Cincinnati, O.
Millar, Charles, & Son Co., Utica, N. Y.
Pulsometer Steam Pump Co., New York.
Prescott, F. M., Steam Pump Co., Milwaukee
Reliance Machine & Tool Wks., St. Louis
Southwark Foundry & Mach. Co., Philadelphia.
Stroudsburg Engine Wks., Stroudsburg, Pa.
Struthers, Wells & Co., Warren, Pa.
Sturtevant Co., B. F., Hyde Park, Mass.
Tacony Iron Works, New York, N. Y.
Troy Public Works Co., Utica, N. Y.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Watertown Engine Co., Watertown, N. Y.
Wickes Bros., New York.

Engines—Traction
Avery Mfg. Co., Peoria, Ill.

Exhaust Heads
Abendroth & Root Mfg. Co., Newburgh, N. Y.
American Spiral Pipe Works, Chicago.
Buffalo Forge Co., Buffalo, N. Y.
Burt Mfg. Co., Akron, O.
McGowan, John H., Co., Cincinnati, O
Sturtevant, B. F., Co., Hyde Park, Mass.

Expanded Metal (See Fireproof Construction)

Excavating Machinery (See Ditching Machinery)

Fans—Exhaust (See Ventilating)

Fence Gates, Etc. (See Railings)

Feed-water Heaters and Purifiers
Alberger Condenser Co., New York.
Green Fuel Economizer Co., Matteawan, N. Y.
Harrison Safety Boiler Works, Philadelphia.
Keeler, E., Co., Williamsport, Pa.
Marion Incline Filter & Heater Co., Marion, O.
Petroleum Iron Works Co., Washington, Pa.
Reeves Bros. Co., Alliance, O.
Scaife, Wm. B., & Sons Co., Pittsburg, Pa.
Sturtevant Co., B. F., Hyde Park, Mass.
Wheeler, C. H., Mfg. Co., Philadelphia.
Wickes Bros., New York.

Filters—Grease and Oil
Burt Mfg. Co., Akron, O.
Harrison Safety Boiler Works, Philadelphia.
N. Y. Continental Jewell Filtration Co., N. Y.

Filters—Water (See Water Softening Plant)

Fire Department Supplies
Bourbon Copper & Brass Works, Cincinnati, O.
Morse, A. J., & Son, 140 Congress St., Boston.

Fireproof Construction—Steel
Abbott-Gamble Co., New York.
Ambursen Hydraulic Construction Co., Boston.
American Con. Steel Co., Detroit, Mich.
American System of Reinforcing, Chicago.
Associated Expanded Metal Cos., New York
Berger Mfg. Co., Canton, O.
Blome, R. S., Co., Chicago, Ill.
Buell & Mitchell, New York.
Buffalo Steel Co., Tonawanda, N. Y.
Clinton Wire Cloth Co., Clinton, Mass.
Concrete-Steel Engineering Co., New York
Expanded Metal & Corrugated Bar Co., St. Louis
General Fireproofing Co., Youngstown, O.
Gilbreth, F. B., 34 West 26th St., New York
Goff, Horner & Co., Pittsburg, Pa.
Hennebique Construction Co., New York.
Hough Co., W. B., Chicago, Ill.
Hudson Struc. Steel Co., Blvd. & 136th St., N. Y.
Inland Steel Co., Chicago, Ill.
Internat'l Fence & Fireproofing Co., Columbus, O.
Maurer, Henry, & Son, New York.
Monolith Steel Co., Inc., Washington, D. C.
New Jersey Bridge Co., Manasquan, N. J.
National Fireproofing Co., Chicago.
New England Structural Co., Boston, Mass.
Ransome Concrete Machinery Co., New York
Roebling Construction Co, New York.
Rodgers Co., Chicago, Ill.
Rogers-Shear Co, Warren, Pa.
Simpson Bros. Corp., 166 Devonshire St., Boston
Standard Con. Steel Co., New York City.
Structural Concrete Co., New York.
Trussed Concrete Steel Co., Detroit, Mich.
Tucker & Vinton, Inc., 156 Fifth Ave., New York
Turner Construction Co., 11 Broadway, New York
Turner-Forman Co., Philadelphia.
Weber Steel Concrete Chimney Co., Chicago.

Fireproofing Materials
Barrett Mfg. Co., 17 Battery Place, New York
Berger Mfg. Co., Canton, O.
Buffalo Steel Co., Tonawanda, N. Y.

Evans & Howard Fire Brick Co., St. Louis.
General Fireproofing Co., Youngstown, O.
Goerner & Co., Pittsburg, Pa.
Harbison-Walker Refractories Co., Pittsburg, Pa.
Inland Steel Co., Chicago, Ill.
International Fence & Fireproofing Co., Columbus, O.
Johnsonville Co., H. W., New York.
Maurer, Henry, & Son, New York.
Massillon Steel Co., Inc., Washington, D. C.
Mesker Fireproofing Co., Chicago.
National Construction Co., Fuller Bldg., N. Y.
Roebling Forman Co., Philadelphia.

Fire Extinguishers—Automatic
Callahan, W. E., & Co., Louisville, Ky.
Morse, A. J., & Son, 140 Congress St., Boston.

Flush Tanks
Pacific Flush Tank Co., Chicago.

Flywheels
Builders' Iron Foundry, Providence, R. I.
Cooper-Wilcox Co., Newburgh, N. Y.
Cresson, Geo. V., Co., 141 Liberty St., New York.
Power Engineering & Mach. Co., Baltimore, Md.
Vulcan Iron Works, 47 Milwaukee Ave., Chicago.

Forges—Blacksmiths' and Portable
Buffalo Forge Co., Buffalo, N. Y.
Rockwell, B. F., Co., Hyde Park, Mass.

Forgings and Founders and Machinists (see Castings)

Foundry Equipments and Supplies
Engineering Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Koppel, Arthur, Pittsburg, Pa.
Link-Belt Co., Philadelphia.
Meehan Boiler & Const. Co., Lowellville, O.
New Foundry & Machine Co., New York.
Penna. Engineering Works, New Castle, Pa.
Petroleum Iron Works, Washington, Pa.
Poole Engineering & Machine Co., Baltimore.
Reeves Bros. Co., Alliance, O., and Syracuse, N. Y.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Stuebner, G. L., Iron Works, New York.
Sturtevant, B. F., Co., Hyde Park, Mass.
Vulcan Iron Works, Wilkes-Barre, Pa.
Wiener, Ernst., Co., Morris Bldg., New York.

Frogs and Switches—Railway
Buda Foundry & Mfg. Co., Chicago.
Fairbanks, Morse & Co., Chicago.
Hyde Bros. & Co., Pittsburg.
Koppel, Arthur, 66 Broad St., New York.
Motley, Green & Co., 66 Broad St., New York.
Pennsylvania Steel Co., Philadelphia.
Rail Joint Co., 29 W. 34th St., New York.
Ramapo Iron Works, Hillburn, N. Y.
Robinson & Orr, Pittsburg, Pa.
Wiener, Ernst., Co., Morris Bldg., New York.
Wonham-Magor Eng'ring Co., 27 Broadway, N. Y.

Fuel Economizers
Bartlett, C. O., & Snow Co., Cleveland, O.
Green Fuel Economizer Co., Matteawan, N. Y.
Harrison Safety Boiler Works, Philadelphia.
Sturtevant, B. F., Co., Hyde Park, Mass.

Furnaces—Garbage and Refuse
American Process Co., 62 William St., New York.
Lewis & Kitchen, Chicago.

Furnaces—Gas, Lead Melting and Smelting
American Gas Furnace Co., 23 John St., N. Y.
Sharon Boiler Works, Sharon, Pa.
Stuebner, G. L., Iron Works, L. I. City, N. Y.
Wellman-Seaver-Morgan Co., Cleveland, O.

Furniture and Office Fittings
American Drafting Furniture Co., Rochester, N. Y.
Berger Mfg. Co., Canton, O.
Economy Drawing Table Co., Toledo, O.
General Fire-Proofing Co., Youngstown, O.
Keuffel & Esser Co., New York.
Metal Sectional Furn. Co., Benton Harbor, Mich.

Garbage Disposal (See Furnaces, Garbage and Sewage Disposal)

Gas Machinery, Fittings and Fixtures, Compressors, Etc.
American Gas Furnace Co., 23 John St., New York.
Backus Water Motor Co., Newark, N. J.
Marine Engine & Machine Co., New York.
McNeil, James, & Bros. Co., Pittsburg, Pa.
Norwalk Iron Works, South Norwalk, Conn.
Power & Mining Mchy. Co., Cudahy, Wis.
Sharon Boiler Works, Sharon, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.

Gaskets—Bronze and Copper
American Spiral Pipe Works, Chicago.
Detroit Leather Specialty Co., Detroit, Mich.
Johns-Manville Co., H. W., New York.
Power Specialty Co., New York.
U. S. Mineral Wool Co., New York.

Gates—Sluice (See Valves)

Gages (See Steam Specialties)

Gearing
Caldwell, H. W., & Son Co., Chicago.
Coldwell-Wilcox Co., Newburgh, N. Y.
Cresson, Geo. V., Co., 141 Liberty St., New York.
Fawcus Machine Co., Pittsburg.
Jeffrey Mfg. Co., Columbus, O.
Poole Engineering & Machine Co., Baltimore.
Rockwood Mfg. Co., Indianapolis, Ind.
Taylor Iron & Steel Co., Highbridge, N. J.
Vulcan Iron Works, 47 Milwaukee Ave., Chicago.

Gloves
Luther, J. P., Glove Co., Berlin, Wis.

Governors—Steam Engine
Buffalo Forge Co., Buffalo, N. Y.
Clow, J. B., & Sons, Chicago.
Lombard Governor Co., Ashland, Mass.
Lowenecker, Chas., & Co., New York.

Governors—Water-Wheel
Leffel, James, & Co., Springfield, O.
Lombard Governor Co., 36 Whittier St., Boston.
Pelton Water Wheel Co., San Francisco.
Risdon-Allott Turbine Co., Mount Holly, N. J.

Graders and Scrapers—Earth (See Road Machinery)

Graphite and Belt Dressing
Detroit Graphite Mfg. Co., Detroit, Mich.
Dixon, Joseph, Crucible Co., Jersey City, N. J.
Gohen Mfg. Co., Canton, O.
Internat'l Acheson Graphite Co., Niagara Falls.
National Paint Works, New York.
U. S. Graphite Co., Saginaw, Mich.

Grinding and Mixing Machinery (See Crushers and also Mixers)

Hangers—Joist
Caldwell, H. W., & Son Co., Chicago.
Poole Engineering & Machine Co., Baltimore.

Heating (See Ventilating)

Heaters, Electric
Johns-Manville Co., H. W., New York.

Hoisting and Conveying Machinery (See Coal and Ore Handling and Derricks)

Hoists (See Cranes)

Hose and Fittings
Buffalo Forge Co., Buffalo, N. Y.
Edson Mfg. Co., Boston, Mass.
Ingersoll Rand Co., New York.
Sprague Electric Co., New York.
Sullivan Machinery Co., Chicago.

Hydrants and Street Washers (See Valves)

Hydraulic Rams
Cameron, A. S., Steam Pump Works, New York.
Watson-Stillman Co., 25 Dey St., New York.
Goulds Mfg Co., Seneca Falls, N. Y.
Pelton Water Wheel Co., San Francisco.
Rife Hyd. Ram Co., New York.

Ice and Refrigerating Machinery
Marine Engine & Machine Co., New York.
Morris Machine Works, Baldwinsville, N. Y.

Injectors and Inspirators
Clow, James B., & Sons, Chicago.
Fairbanks, Morse & Co., Chicago.
Lunkenheimer Co., Cincinnati, O.

Inspection of Building Materials (See Professional Card Pages)

Instruments—Engineering, Surveying and Mathematical (See Engineers' Supplies)

Instruments—Indicating
Du Vivier, E. H., 14 Church St., New York.

Instruments—Recording
Du Vivier, E. H., 14 Church St., New York.

Jacks—Hydraulic and Screw
Boston & Lockport Block Co., Boston.
Buda Foundry & Mfg. Co., Chicago.
Cleveland City Forge & Iron Co., Cleveland, O.
Dunn Mfg. Co., Pittsburg, Pa.
Fairbanks, Morse & Co., Chicago.
Watson-Stillman Co., 46 Dey St., New York.

Joints—Expansion
Coffin Valve Co., Boston.
Power Specialty Co., New York.

Joints—Flexible
Clow & Sons Co., J. B., Chicago, Ill.

Kilns—Cement (See also Dryers)
Atlas Dryer Co., Cleveland, O.
Bartlett, C. O., & Snow Co., Cleveland, O.
Bonnot Co., Canton, O.
Cresson, Geo. V., Co., 141 Liberty St., New York.
Cummer, F. D., & Son Co., Cleveland, O.
Fuller Eng. Co., Allentown, Pa.
Reeves Bros. Co., Alliance, O.
Smidth, F. L., & Co., New York.
U. S. Drying Engineering Co., New York.
Vulcan Iron Works, Wilkes-Barre, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.

Ladles—Foundry
Meehan Boiler & Construction Co., Lowellville, O.
Poole Engineering & Machine Co., Baltimore.
Reeves Bros. Co., Alliance, O.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Vulcan Iron Works, Wilkes-Barre, Pa.
Warren City Tank & Boiler Works, Warren, O.

Lamp Posts
Belmont Iron Works, Philadelphia.
Bethlehem Fdy. & Mach. Co., So. Bethlehem, Pa.
Drummond, M. J., & Co., New York.
Fox, John, & Co., 253 Broadway, New York.

Lamps and Lanterns—Railway
General Electric Co., Schenectady, N. Y.
Safety Car Heating & Lighting Co., New York.

Lath, Metal (See Fireproof Construction)

Lawyers—Patent (See Patent Attorneys.)

Lights—Sidewalk and Vault (See Skylights)

Lights—Contractors'
Kitson Hydro-Carbon Heat & Inc. Ltg. Co., Phila.
Milburn Co., Alex., Baltimore, Md.
Wells Light Mfg. Co., New York.

Locomotives—Compressed Air
American Locomotive Co., New York.
Baldwin Locomotive Works, Philadelphia.
Davenport Locomotive Works, Davenport, Ia.
Porter, H. K., Co., Pittsburg, Pa.

Locomotives—Electric and Battery
American Locomotive Co., 111 Broadway, N. Y.
Baldwin Locomotive Works, Philadelphia.
Davenport Locomotive Works, Davenport, Ia.
General Electric Co., Schenectady, N. Y.
Hunt, C. W., & Co., Stapleton, S. I., N. Y.
Koppel, Arthur, 66 Broad St., New York.
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.

Locomotives—Geared
Byers, John F., Machine Co., Ravenna, O.
Lima Locomotive & Machine Co., Lima, O.
Robinson & Orr, Pittsburg, Pa.

Locomotives — Industrial and Light (See also Second-Hand Supplies)
Carlin's, Thos., Sons Co., Allegheny, Pa.
Davenport Locomotive Works, Davenport, Ia.
Fitz-Hugh, Luther, Co., Chicago.
Hunt, C. W., Co., West New Brighton, N. Y.
Hyde Bros. & Co., Pittsburg, Pa.
Keystone Equip't Co., West St. Bldg., New York.
Koppel, Arthur, Co., New York.
Lima Locomotive & Machine Co., Lima, O.
Porter, H. K., Co., Pittsburg, Pa.
Robinson & Orr, Pittsburg, Pa.
Southern Iron & Equipment Co., Atlanta, Ga.
Torbert, A. C., & Co., Chicago.
Vulcan Iron Works, Wilkes-Barre, Pa.
Watson, Benj. New York.
Wiener, Ernst, Co., Morris Bldg., New York.
Wonham-Magor Engineering Co., New York.

Locomotives—Steam
American Locomotive Co., 111 Broadway, N. Y.
Baldwin Locomotive Works, Philadelphia.
Davenport Locomotive Works, Davenport, Ia.
Fitz-Hugh, Luther, Co., Chicago.
Lima Locomotive & Machine Co., Lima, O.
Mas, The, Co., New York.
Porter, H. K., 531 Wood St., Pittsburg, Pa.
Southern Iron & Equipment Co., Atlanta, Ga.
Torbert, A. C., & Co., Chicago.

Logging Outfits and Machinery
Browning Eng. Co., Cleveland.
Fitz-Hugh, Luther, Co., Chicago.
Jeffrey Mfg. Co., Columbus, O.
Lidgerwood Mfg. Co., New York.
Lima Locomotive & Machine Co., Lima, O.
Marion Steam Shovel Co., Marion, O.
Porter, H. K., Co., Pittsburg, Pa.
Robinson & Orr, Pittsburg, Pa.
Troy Wagon Works Co., Troy, O.

Lubricators (See Steam Specialties)

Machine Tools
Aibree, Chester B., Allegheny, Pa.
Allen, John F., 370 Girard Ave., New York.
Bethlehem Fdy. & Machine Co., So. Bethlehem, Pa.
Builders' Iron Foundry, Providence, R. I.
Dallett, Thos. H., Co., Philadelphia.
Fairbanks, Morse & Co., Chicago.
General Pneumatic Tool Co., New York.
Hanna Engineering Wks., 820 Elston Ave., Chicago.
Helwig Mfg. Co., St. Paul, Minn.
Pels, Henry, & Co., 68 Broad St., N. Y. City.
Stow Flexible Shaft Co., Philadelphia.
Wickes Bros., New York.

Machinery—Special
Fawcus Machine Co., Pittsburg.

Machinery—Second-Hand (See Second-Hand Supplies)

Magnets, Lifting
Cutler Hammer Co., Milwaukee, Wis.

Meters, Meter Boxes and Fittings
American District Steam Co., Lockport, N. Y.
Berger, C. L., & Sons, Boston.
Bristol Co., Waterbury, Conn.
Buffalo Meter Co., Buffalo, N. Y.
Builders' Iron Foundry, Providence, R. I.
Clow, James B., & Sons, Chicago.
Drummond, M. J., & Co., 182 Broadway, N. Y.
General Electric Co., Schenectady, N. Y.
Hersey Mfg. Co., Boston.
National Meter Co., 84 Chambers St., New York.
Neptune Meter Co., L. I. City, N. Y.
Pittsburg Meter Co., East Pittsburg, Pa.
Simplex Meter Co., 112 N. Broad St., Philadelphia.
Thomson Meter Co., Brooklyn, N. Y.
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.
Worthington, Henry R., 118 Liberty St., N. Y.

Mineral Wool
U. S. Mineral Wool Co., 143 Liberty St., N. Y.
Johns-Manville Co., H. W., 100 William St., N. Y.

Mining and Mill Machinery and Supplies (See also Coal and Ore Handling)
Abner-Doble Co., San Francisco.
American Process Co., New York.
Austin Mfg. Co., Chicago.
Bacon, Earle C., 26 Cortlandt St., New York.
Bartlett, C. O., & Snow Co., Cleveland, O.
Beatty, M., & Sons Co., Welland, Ont.
Bethlehem Fdy. & Machine Co., So. Bethlehem, Pa.
Bradley Pulverizer Co., 92 State St., Boston.
Cresson, Geo. V., Co., 141 Liberty St., New York.
Drake Standard Machine Works, Chicago.
Emerson Steam Pump Co., Alexandria, Va.
Fairbanks, Morse & Co., Chicago.
Fuller Eng. Co., Allentown, Pa.
Ingersoll-Rand Co., 11 Broadway, New York.
Jeffrey Mfg. Co., Columbus, O.
Koppel, Arthur, Co., New York.
Leschen, A., & Sons Rope Co., St. Louis.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Link-Belt Co., Philadelphia.
McKiernan Drill Co., 170 Broadway, New York.
Marion Steam Shovel Co., Marion, O.
Norwalk Iron Works Co., South Norwalk, Conn.
Oliver, Wm. J., Mfg. Co., Knoxville, Tenn.
Power & Mining Mchy. Co., Cudahy, Wis.
Robins Conveying Belt Co., New York.
Sullivan Machinery Co., Chicago.
Vulcan Iron Works, Wilkes-Barre, Pa.
Webster Mfg. Co., Chicago.
Wellman-Seaver-Morgan Co., Cleveland, O.
Wiener, Ernst, Co., Morris Bldg., New York.

Mixers—Cement, Asphalt and Mortar
Alexander Iron Works, Syracuse, N. Y.
Atlas Dryer Co., Cleveland, O.
Bartlett, C. O., & Snow Co., Cleveland, O.
Caldwell, H. W., & Son Co., Chicago.
Fuller Eng. Co., Allentown, Pa.
Hains, P. C., 416 McGill St., Washington.
Hough Co., W. B., Chicago, Ill.
International Fence & Fireproof Co., Columbus, O.
Jeffrey Mfg. Co., Columbus, O.
Kent Mill Co., 170 Broadway, New York.
Municipal Engineering & Contracting Co., Chicago.
Smidth, F. L., & Co., New York.
Ransome Concrete Machinery Co., 11 B'way, N. Y.
Taylor Iron & Steel Co., Highbridge, N. J.
Vulcan Iron Works, Wilkes-Barre, Pa.

Motors—Compressed Air
General Pneumatic Tool Co., Montour Falls, N. Y.
Helwig Mfg. Co., St. Paul, Minn.
Stow Flexible Shaft Co., Philadelphia.

Motors—Water and Steam (See Turbines)

Nuts and Nut-Locks
American Bridge Co., 42 Broadway, New York.
Cleveland City Forge Co., Cleveland, O.
Steward & Romaine Mfg. Co., Philadelphia.

Packing—Flange and Joint
Clow, James B., & Sons, Chicago.
Detroit Leather Spec. Co., Detroit, Mich.
Johns-Manville Co., H. W., New York.
New York Lead Wool Co., New York.
Power Specialty Co., 126 Liberty St., New York.

Paint, Varnish, Metal Contings
Barrett Mfg. Co., 17 Battery Place, New York.
Detroit Graphite Mfg. Co., 141 Broadway, N. Y.
Dixon, Joseph, Crucible Co., Jersey City, N. J.
Gohen Mfg. Co., Canton, O.
Hammond, Boynton Paint & Chemical Co., Norwich, Conn.
Hydrex Felt & Eng. Co., 120 Liberty St., N. Y.
National Paint Works, Williamsport, Pa.
Nubian Paint & Varnish Co., Chicago.
Rinald Brothers, Philadelphia.
Schoellkopf, Hartford, Hanna Co., Buffalo, N. Y.
Sicilian Asphalt Paving Co., New York.
Standard Paint Co., New York.
Toch Bros., 320 Fifth Ave., New York.
U. S. Graphite Co., Saginaw, Mich.

Paint and Whitewash Spraying Machines
Bartlett, C. O., & Snow Co., Cleveland, O.

Paper, Blue Print and Apparatus (See Blue Print Apparatus)

Paper—Detail
Mittineague Paper Co., Mittineague, Mass.

Patent Lawyers
Macdonald & Macdonald, 100 Broadway, N. Y.
Straley & Haasbrouck, 257 Broadway, New York.

Paving Blocks—Stone
Alpha Portland Cement Co., Alpha, N. J.
Leopold, J., & Co., 18 Broadway, New York.

Paving Blocks—Wood (See Creosoting)

Pile Drivers, Hammers and Jets
American Hoist & Derrick Co., St. Paul, Minn.
Austin Mfg. Co., Chicago, Ill.
Bartlett & Co., A. F., Saginaw, Mich.
Beatty, M., & Sons Co., Welland, Ont.
Briggs, J. M., 17 Battery Pl., New York.
Bucyrus Co., South Milwaukee, Wis.
Dobbie Fdy. & Mach. Co., Niagara, Falls, N. Y.
Flory, S., Mfg. Co., Bangor, Pa.
Gilbreth, F. B., 34 West 26th St., New York.
Hayward Co., 97 Cedar St., New York.
Industrial Works, Bay City, Mich.
Interstate Eng'g Co., Bedford, O.
Lidgerwood Mfg. Co., 96 Liberty St., New York.
Mead Morrison Mfg. Co., Boston.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Toledo Foundry & Machine Co., Toledo, O.
Vulcan Iron Works, 47 Milwaukee Ave., Chicago.
Vulcan Iron Works Co., Toledo, O.

Pile Shoes
Edson Mfg. Co., 257 Atlantic Ave., Boston.
Janney, Steinmetz & Co., Drexel Bldg., Phila.
Patterson, W. W., Co., 54 Water St., Pittsburg.
Taylor Iron & Steel Co., Highbridge, N. J.

Piles and Piling—Concrete
Cowing Engineering Co., Cleveland, O.
Foundation Co., New York.
Raymond Concrete Pile Co., Chicago.
Simplex Concrete Piling Co., Philadelphia.

Piles—Interlocking
Jackson, Geo. W., Inc., Chicago, Ill.
Nat'l Interlocking Steel Shoeing Co., Chicago.
Wemlinger Steel Piling Co., New York.

Pipe—Covering
H. W. Johns-Manville Co., New York.

Pipe—Iron and Steel
American Cast Iron Pipe Co., Birmingham, Ala.
American Pipe Mfg. Co., 112 No. Broad St., Phila.
Bellefontaine Bridge Co., Bellefontaine, O.
Bethlehem Fdy. & Machine Co., So. Bethlehem, Pa.
Builders' Iron Foundry, Providence, R. I.
Central Foundry Co., New York.
Clow, James B., & Sons, Chicago.
Coldwell-Wilcox Co., Newburgh, N. Y.
Dimmick Pipe Co., Birmingham, Ala.
Donaldson Iron Co., Emaus, Lehigh Co., Pa.
Drummond, M. J., & Co., 182 Broadway, N. Y.
Fox, John, & Co., 253 Broadway, New York.
Gillespie, T. A., & Co., Pittsburg, Pa.
Kellogg Co., M. W., New York.
Lynchburg Fdy. Co., 220 Broadway, New York
Massillon Iron & Steel Co., Massillon, O.
McWane Pipe Works, Lynchburg, Va.
Millar, Charles, & Son Co., Utica, N. Y.
Pittsburg Mfg. Co., Pittsburg, Pa.
Union Hydraulic Works, Philadelphia.
U. S. Cast Iron Pipe & Foundry Co., New York.
Warren Foundry & Machine Co., New York.
Wood, R. D., & Co., 400 Chestnut St., Phila.

Pipe—Lead
Clow, James B., Sons, Chicago.
Drummond, M. J., & Co., 182 Broadway, N. Y.
Fox, John, & Co., 253 Broadway, New York.
Millar, Charles, & Son Co., Utica, N. Y.

Pipe—Reinforced Concrete
Reinforced Concrete Pipe Co., Jackson, Mich.

Pipe—Riveted Steel
Abendroth & Root Mfg. Co., Newburgh, N. Y.
American Spiral Pipe Works, Chicago.
East Jersey Pipe Co., Paterson, N. J.
Gillespie, T. A., & Co., Pittsburg, Pa.
McAleenan Boiler Co., Peoria, Ill.
McNeil, Jas., & Bro., Pittsburg, Pa.
Meehan Boiler & Const. Co., Lowellville, O.
Reeves Bros. Co., Alliance, O.
Tippett & Wood, Phillipsburg, N. J.

Pipe—Vitrified Clay and Sewer
Blackmer & Post Pipe Co., St. Louis.
Climax Road Machine Co., Marathon, N. Y.
Dickey, W. S., Clay Mfg. Co., Kansas City, Mo.
Drummond, M. J., & Co., 182 Broadway, N. Y.
Fox, John, & Co., 253 Broadway, New York.
Macomb Sewer Pipe Co., Kansas City, Mo.
Monmouth Mining & Mfg. Co., Monmouth, Ill.
Purington Paving Brick Co., Galesburg, Ill.
St. Mary's Sewer Pipe Co., St. Mary's, Pa.

Pipe—Wooden
Excelsior Wooden Pipe Co., San Francisco, Cal.
Michigan Pipe Co., Bay City, Mich.
National Wood Pipe Co., Los Angeles, Cal.
Wyckoff Pipe & Creo. Co., Stamford, Conn.
Wyckoff Wood Pipe Co., Elmira, N. Y.

Pipe Cutting and Threading Machines
Saunder's D., Sons, Yonkers, N. Y.
Smith, A. P., Mfg. Co., Newark, N. J.

Pipe Fittings (Brackets, Hangers, Repair Sleeves, Strainers, Etc.)
American Cast Iron Pipe Co., Birmingham, Ala.
Bourbon Copper & Brass Works, Cincinnati, O.
Central Foundry Co., New York.
Clow, James B., & Sons, Chicago.
Donaldson Iron Co., Emaus, Lehigh Co., Pa.
Dresser, S. R., Mfg. Co., Bradford, Pa.
Drummond, M. J., & Co., New York.
Fox, John, & Co., 253 Broadway, New York.
Lynchburg Foundry Co., 220 Broadway, N. Y.
Massillon (Ohio) Iron & Steel Co.
Michigan Pipe Co., Bay City, Mich.
Smith, A. P., Mfg. Co., Newark, N. J.
Union Hydraulic Works, Philadelphia.
Watkins, Thomas, Johnstown, Pa.

Pipe Joints—Flexible Water Pipe, and High Pressure Pipe
Coldwell-Wilcox Co., Newburgh, N. Y.
Donaldson Iron Co., Emaus, Lehigh Co., Pa.
Dresser, S. R., Mfg. Co., Bradford, Pa.
Fox, John, & Co., 253 Broadway, New York.
Holmes, A. L., Grand Rapids, Mich.
Warren Foundry & Machine Co., New York.
Watkins, Thomas, Johnstown, Pa.

Pipe Line Supplies
Scovil Hdw. & Supply Co., 641 Greenwich St., N.Y.

Plows—Contractors' (See Road Machinery)

Pneumatic Tools, Riveters, Clippers, Etc.
Aibree, Chester B., Allegheny, Pa.
Allen, John F., 370 Gerard Ave., New York.
American Air Compressor Works, New York.
Clayton Air Compressor Works, New York.
Dallett, Thos H., Co., Philadelphia.
General Pneumatic Tool Co., Montour Falls, N. Y.
Hanna Engineer'g Wks., 820 Elston Ave., Chicago.
Helwig Mfg. Co., St. Paul, Minn.
Ingersoll-Rand Co., New York.
Pels, Henry, & Co., 68 Broad St., N. Y. City.
Reliance Machine Co., St. Louis.
Stow Flexible Shaft Co., Philadelphia.

Poles and Posts—Iron and Steel, Trolley Posts, Etc.
Belmont Iron Works, Philadelphia.
Drummond, M. J., & Co., New York.
Donaldson Iron Co., Emaus, Lehigh Co., Pa.
Fox, John, & Co., 253 Broadway, New York.

Portable Buildings, Greenhouses, Etc.
Rendle, A. E., 428 11th Ave., New York.
Springfield Port. House Co., Springfield, Mass.

Power Transmission Machinery
Broderick & Bascom Rope Co., St. Louis.
Browning Engineering Co., Cleveland, O.
Caldwell, H. W., & Son Co., Chicago.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Cresson, G. V., Co., 141 Liberty St., New York.
Flory, S., Mfg. Co., Bangor, Pa.
Jeffrey Mfg. Co., Columbus, O.
Leschen, A., & Sons Rope Co., St. Louis.
Link-Belt Co., Philadelphia.
Minn. Steel & Machinery Co., Minneapolis.
Mundy, J. S., 22 Prospect St., Newark, N. J.
Poole Engineering & Machine Co., Baltimore.
Robins Conveying Belt Co., New York.
Rockwood Mfg. Co., Indianapolis, Ind.
Webster Mfg. Co., Chicago.
Westinghouse Electric & Mfg. Co., Pittsburg, Pa.

Pulleys and Blocks
Boston & Lockport Block Co., Boston.
Byers, John F., Machine Co., Ravenna, O.
Caldwell, H. W., & Son Co., Chicago.
Cresson, G. V., Co., 141 Liberty St., New York.
Dobbie Fdy. & Mach. Co., Niagara Falls, N. Y.
Jeffrey Mfg. Co., Columbus, O.
Leschen, A., & Sons Rope Co., St. Louis.
N. J. Foundry & Machine Co., New York.
Pittsburg (Pa.) Block & Mfg. Co.
Poole Engineering & Machine Co., Baltimore.
Risdon-Alcott Turbine Co., Mount Holly, N. J.
Smith, S. Morgan Co., York, Pa.
Terry & Tench, New York.
Variety Iron Works Co., Cleveland, O.

Pulverizers (See Crushers)

Pumps—Air Lift and Artesian
Alberger Condenser Co., 95 Liberty St., New York.
Alberger Pump Co., New York.
American Air Compressor Works, New York.
Cameron, A. S., Steam Pumps Works, New York.
Cook Well Co., St. Louis.
Davidson Co., M. T., New York.
Dean Bros.' Steam Pump Works, Indianapolis, Ind.
Deming Co., Salem, O.
Downie Pump Co., Downieville, Pa.
Emerson Steam Pump Co., Alexandria, Va.
Epping-Carpenter Co., Pittsburg, Pa.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hill Machine Co., Anderson, Ind.
Ingersoll-Rand Co., New York.
McGowan, John H., Co., Cincinnati, O.
Otto Gas Engine Co., Philadelphia.
Southwark Foundry & Machine Co., Philadelphia.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Weinman Machine Works, Columbus, O.

Pumps—Diaphragm
Bond, Harold L., & Co., 140 Pearl St., Boston.
Boston & Lockport Block Co., Boston.
Carlin Mchy & Supply Co., Inc. Pittsburg, Pa.
Clow & Sons S., J. B., Chicago, Ill.
Deming Co., Salem, O.
Edson Mfg. Co., 255 Atlantic Ave., Boston.
Goulds Mfg. Co., Seneca Falls, N. Y.

Pumps—Electric
Alberger Pump Co., New York.
Cameron, A. S., Steam Pump Works, New York.
Dayton Hydraulic Machy. Co., Dayton, O.
Davidson Co., M. T., New York.
Dean Bros.' Steam Pump Wks., Indianapolis, Ind.
De Laval Steam Turbine Co., Trenton, N. J.
Deming Co., Salem, O.
Downie Pump Co., Downieville, Pa.
General Electric Co., Schenectady, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y.
McGowan, John H., Co., Cincinnati, O.
Wheeler, C. H., Mfg. Co., Philadelphia.
Wickes Bros., New York.

Pumps—Fire, Force and Power
Alberger Pump Co., New York.
Atlas Engine Works, Indianapolis, Ind.
Buffalo Steam Pump Co., Buffalo, N. Y.
Cameron, A. S., Steam Pump Works, New York.
Cook Well Co., St. Louis.
Dayton Hydraulic Machy. Co., Dayton, O.
Dean Bros.' Steam Pump Wks., Indianapolis, Ind.
Deming Co., Salem, O.
Edson Mfg. Co., 255 Atlantic Ave., Boston.
Emerson Steam Pump Co., Alexandria, Va.
Goulds Mfg. Co., Seneca Falls, N. Y.
McGowan, John H., Co., Cincinnati, O.
Otto Gas Engine Co., Philadelphia.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Weinman Machine Works, Columbus, O.
Wheeler, C. H., Mfg. Co., Philadelphia.
Wickes Bros., New York.

Pumps—Steam, Sewage, Quarry, Mining, Irrigating and Dredging, Centrifugal and Rotary (See Engines—Stationary)

Pumps—Vacuum
Alberger Condenser Co., 95 Liberty St., New York.
Alberger Pump Co., New York.
Bury Compressor Co., Erie Pa.
Cameron, A. S., Steam Pump Works, New York.
Dean Bros.' Steam Pump Wks., Indianapolis, Ind.
Deming Co., Salem, O.
Epping-Carpenter Co., Pittsburg, Pa.
Goulds Mfg. Co., Seneca Falls, N. Y.
International Steam Pump Co., New York.
Jeanesville Iron Works Co., Hazleton, Pa.
McGowan, John H., Co., Cincinnati, O.
Reliance Machine Co., St. Louis.
Southwark Foundry & Machine Co., Philadelphia.
Wheeler, C. H., Mfg. Co., Philadelphia.

Pumps—Wind-Mill
Baltimore Cooperage Co., Baltimore, Md.
Cook Well Co., St. Louis.
Deming Co., Salem, O.
Des Moines Bridge & Iron Co., Des Moines, Ia.
Downie Pump Co., Downieville, Pa.
Fairbanks, Morse & Co., Chicago.
U. S. Wind Engine & Pump Co., Batavia, Ill.

Pyrometers—Electric
Bristol, Wm. H., New York.

Railings, Guards, Fences, Etc.
Albree Iron Works, Allegheny, Pa.
Attica Bridge Co., Attica, Ind.
Berlin (Conn.) Construction Co.
Belmont Iron Works, Philadelphia.
Boston Bridge Works, 47 Winter St., Boston.
Joliet Bridge & Iron Co., Joliet, Ill.
Kratzer, W. N., & Co., Pittsburg.
New England Structural Co., Boston.
Schreiber, L. & Sons Co., Cincinnati, O.
Stupp Bros.' Bridge & Iron Co., St. Louis.

Rails
Atlantic Equipment Co., 111 Broadway, New York.
Foster, L. B., Co., Pittsburg.
Green Co., L. A., Pittsburg, Pa.
Hyde Bros. & Co., Pittsburg.
Kilgore Peteler Co., Minneapolis, Minn.
Koppel, Arthur, 66 Broad St., New York.
Males Co., The, New York.
Oliver, Wm. J., Mfg. Co., Knoxville, Tenn.
Pennsylvania Steel Co., Philadelphia.
Richardson & Co., Pittsburg, Pa.
Robinson & Orr, Pittsburg, Pa.
Southern Iron & Equipment Co., Atlanta, Ga.
Watson, Benj., New York.
Wiener, Ernst, Co., Morris Bldg., New York.
Wonham-Magor & Co., New York.

Rail Joints, Fastenings, Etc.
Rail Joint Co., New York.

Rails—Second-Hand (See Second-Hand Supplies and For Sale Ads.)

Railway Track Specialties and Equipment
Abbott-Gamble Co., New York.
Blome, R. S., Co., Chicago.
Buda Foundry & Mfg. Co., Chicago.
Fairbanks, Morse & Co., Chicago.
Hayes Track App. Co., Geneva, N. Y.
Hunt, C. W., & Co., 45 Broadway, New York.
Hyde Bros., & Co., Pittsburg, Pa.
Kilgore Peteler Co., Minneapolis, Minn.
Koppel, Arthur, Co., New York.
Pennsylvania Steel Co., Philadelphia.
Rail Joint Co., 29 W. 34th St., New York.
Railroad Supply Co., Bedford Bldg., Chicago.
Railway Steel-Spring Co., 71 Broadway, N. Y.
Ramapo Iron Works, Hillburn, N. Y.
Watson, Benj., New York.
Wiener, Ernst, Co., Morris Bldg., New York.

Railways—Industrial and Narrow Gage (See Cars and Locomotives)

Railways, Rack
W. Hildenbrand, 1 Broadway, New York.

Refractory Materials
Harbison-Walker Refractories Co., Pittsburg, Pa.

Reinforced Concrete Construction (See Fireproof Construction)

Rivets—Iron and Steel
Mount Vernon Bridge Co., Mt. Vernon, O.
New England Structural Co., Boston.

Riveters (see Machine Tools)

Road Machinery, Road Rollers, Plows, Scrapers, Etc.
Austin Mfg. Co., Chicago.
Buffalo Steam Roller Co., Buffalo, N. Y.
Climax Road Machine Co., Marathon, N. Y.
Erie Machine Shops, Erie, Pa.
Good Roads Machinery Co., New York.
Iroquois Iron Works, Philadelphia, Pa.
Kelly-Springfield Road Roller Co., Springfield, O.
Longenecker, Chas., & Co., New York.
Monarch Road Roller Co., Groton, N. Y.
Power & Mining Mchy. Co., Cudahy, Wis.
Rodger Ballast Car Co., Chicago.
Scholl, Julian, & Co., 126 Liberty St., New York.
Vulcan Iron Works Co., Toledo, O.
Western Wheeled Scraper Co., Aurora, Ill.

Rolling Mill Machinery
Fawcus Machine Co., Pittsburg.
Penna. Engineering Works, New Castle, Pa.
Poole Engineering & Machinery Co., Baltimore.
Variety Iron Works Co., Cleveland, O.
Wellman-Seaver-Morgan Co., Cleveland, O.

Roofing
Berger Mfg. Co., Canton, O.
Genasco Roofing Co., Philadelphia.
General Fireproofing Co., Youngstown, O.
Johns-Manville Co., H. W., New York.
Sicilian Asphalt Paving Co., New York.
Standard Paint Co., New York.

Roofing—Glass (See Skylights)

Rope Fittings, Couplings and Cordage
American Hoist & Derrick Co., St. Paul, Minn.
Broderick & Bascom Rope Co., St. Louis.
Lambert Hoisting Engine Co., Newark, N. J.
Leschen, A., & Sons Rope Co., St. Louis.
Roebling's, John A., Sons Co., Trenton, N. J.
Trenton Iron Co., Trenton, N. J.

Rules and Tapes
James Chesterman & Co., Sheffield, England.
Lufkin Rule Co., Saginaw, Mich.
Keuffel & Esser, New York City.

Saw Mill Machinery
Jeffrey Mfg. Co., Columbus, O.
Leschen, A., & Sons Rope Co., St. Louis.
Risdon-Alcott Turbine Co., Mount Holly, N. J.

Scales—Weighing (See Testing Machines)

Scale Boxes
Cyclopean Iron Works Co., Jersey City.

Scrapers—Road (See Road Machinery)

Schools and Colleges (See College and School Advertisements)

Second-Hand Supplies and Agents
Avery, Charles F., 45 Broadway, New York.
Braden, James S., 26 Cortlandt St., New York.
Briggs, Marvin, New York.
Carlin's, Thomas, Sons Co., Allegheny, Pa.
Carlin Mach. & Supply Co., Allegheny, Pa.
Chicago House-Wrecking Co., Chicago.
Cincinnati Equipment Co., Cincinnati, O.
Continental Car & Equipment Co., New York.
Contractors' Supply & Equip. Co., Chicago.
Dallett & Co., 301 Walnut Pl., Philadelphia.
Davis, M. E., New York.
Foster Co., L. B., Pittsburg.
Green Co., L. A., Pittsburg, Pa.
Harper Machinery Co., New York.
Hitner, H. A., Sons, Philadelphia.
Hyde Bros. & Co., Pittsburg, Pa.
Keystone Equip't Co., West St. Bldg., New York.
Males Co., 713 Traction Bldg., Cincinnati, O.
Richardson & Co., Pittsburg, Pa.
Robinson & Orr, Pittsburg, Pa.
L. F. Seyfert's Sons, Philadelphia, Pa.
Shannon, J. J., & Co., Philadelphia.
Shaw, Willis, Chicago.
Torbert, A. C., Co., Chicago.
Watson, Benj., 66 Beaver St., New York.
Wickes Bros., 137 Liberty St., New York.
Zelnicker, W. A., Supply Co., St. Louis.

Separators—Steam, Grease and Oil
American District Steam Co., Lockport, N. Y.
Bethlehem Fdy. & Mach. Co., So. Bethlehem, Pa.
Coldwell-Wilcox Co., Newburgh, N. Y.
D'Este, Julian, Co., 24 Canal St., Boston.
Goubert Mfg. Co., New York.
Harrison Safety Boiler Works, Philadelphia.

Sewage and Garbage Disposal and Septic Tanks
American Dittler Sewage Disp. Co., 1123 B'way, New York.
Cameron Septic Tank Co., Chicago.
City Wastes Disposal Co., New York.
Edson Mfg. Co., 257 Atlantic Ave., Boston.
Goff, Horner & Co., Pittsburg, Pa.
Lewis & Kitchen, Chicago.
Marion Incline Filter & Heater Co., Marion, O.
N. Y. Sewage Disposal Co., New York.
Pacific Flush Tank Co., 184 La Salle St., Chicago.

Sewer Appliances and Specialties
Blaw Collapsible Steel Centering Co., Pittsburg.
Bond, Harold L., 140 Pearl St., Boston.
Globe Fdry. Co., Port Chester, N. Y.
Loomis-Manning Filter Co., Philadelphia.
Parmley, W. C., 78 Fifth Ave., New York.
Pittsburg Filter Co., Pittsburg, Pa.
Steel Protected Concrete Co., Philadelphia.

Sheaves for Wire Rope, Hoisting
American Hoist & Derrick Co., St. Paul, Minn.
Boston & Lockport Block Co., Boston.
Byers, John L., Machine Co., Ravenna, O.
Caldwell, H. W., & Son Co., Chicago.
Caldwell, W. E., Co., Louisville, Ky.
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Dobbie Fdy. & Machine Co., Niagara Falls, N. Y.
Patterson Co., W. W., Pittsburg, Pa.
Poole Engineering & Machine Co., Baltimore.
Mead-Morrison Mfg. Co., Boston.
Taylor Iron & Steel Co., Highbridge, N. J.
Union Iron Works, Hoboken, N. J.
Vulcan Iron Works Co., Toledo, O.

Sheet Iron and Sheet Metal Work
American Sheet & Tin Plate Co., Pittsburg, Pa.
Buell & Mitchell, New York.
Hodge Boiler Works, East Boston, Mass.
McNeil, Jas., & Bro. Co., Pittsburg, Pa.
National Dry Kiln Co., Indianapolis, Ind.
Petroleum Iron Works Co., Washington, Pa.
Struthers, Wells & Co., Warren, Pa.
Union Iron Works, Hoboken, N. J.
Virginia Bridge & Iron Co., Roanoke, Va.

Shovels and Picks—Hand
Bond, Harold L., Co., 140 Pearl St., Boston.
Fairbanks, Morse & Co., Chicago.
Hyde Bros. & Co., Pittsburg, Pa.
Motley, Green & Co., 66 Broad St., New York.
Scovil Hdw. & Supply Co., 441 Greenwich St., N.Y.
Wyoming Shovel Works, Wyoming, Pa.

Shovels—Steam (See Ditching Machinery and For Sale Ads.)

Signaling Apparatus
Contractors' Plant Mfg. Co., Buffalo, N. Y.
Fairbanks, Morse & Co., Chicago.
General Electric Co., Schenectady, N. Y.
Ramapo Iron Works, Hillburn, N. Y.
Railroad Supply Co., Chicago.

Skylights and Sidewalk Lights
Amer. Luxfer Prism Co., Chicago, Ill.
Berger Mfg. Co., Canton, O.
Brooks, T. H., & Co., Cleveland, O.
Burt Mfg. Co., Akron, O.
Irwin, Thos. W., Mfg. Co., Allegheny, Pa.
Rendle, A. E., 13 West 34th St., New York.
Tucker & Vinton Corp., 154 Fifth Ave., N. Y.
Valle & Young, Baltimore.
Van Noorden, E., Co., Boston.

Standpipes and Tanks (See also Tanks and Towers)
Granger, A. D., Co., New York.
Kennicott Water Softening Co., Chicago.
Milwaukee Bridge Co., Milwaukee, Wis.
Riter-Conley Mfg. Co., 55 Water St., Pittsburg.
Tippett & Wood, Phillipsburg, N. J.
U. S. Wind Engine & Pump Co., Batavia, Ill.
Virginia Bridge & Iron Co., Roanoke, Va.

Steam Specialties
Bristol Co., Waterbury, Conn.
Clow, Jas. B., & Sons, Chicago, Ill.
D'Este, Julian Co., Boston, Mass.
DuVivier, Ernest H., 16 Church St., New York.
Fairbanks, Morse & Co., Chicago.
General Electric Co., Schenectady, N. Y.
Golden Anderson Valve Specialty Co., Pittsburg.
Lunkenheimer Co., Cincinnati, O.
Michigan Pipe Co., Bay City, Mich.
Queen & Co., Philadelphia, Pa.
Power Specialty Co., 111 Broadway, New York.
Sturtevant, B. F., Co., Hyde Park, Mass.
Westinghouse Electric & Mfg. Co., Pittsburg.

Steel Structures (See Bridges)

Stokers—Mechanical
Atlas Dryer Co., Cleveland, O.
Babcock & Wilcox Co., 85 Liberty St., N. Y.
Bartlett, C. O., & Snow Co., Cleveland, O.
Westinghouse Machine Co., Pittsburg.

Stone—Broken, and Quarries
Bound Brook (N. J.) Crushed Stone Co.
Leopold, J., & Co., 18 Broadway, New York.
McMullen, Arthur, Co., New York.
Tomkins, Calvin, 17 Battery Place, New York.

Strainers—Well
Cook Well Co., St. Louis, Mo.
Emerson Steam Pump Co., Alexandria, Va.
Johnson, E. E., St. Paul, Minn.

Street Cleaning Implements, Machinery and Snow Plows
Austin Mfg. Co., Chicago.
Bond, Harold L., & Co., 140 Pearl St., Boston.
Good Roads Machinery Co., 136 Liberty St., N. Y.
Scholl, Julian, & Co., 126 Liberty St., New York.

Structural Work (See Bridges)

Superheaters—Steam
Parker Boiler Co., Philadelphia.
Power Specialty Co., New York.

Switch Stands and Switches (See Frogs)

Tanks—Gas and Oil
Carroll-Porter Boiler & Tank Co., Pittsburg, Pa.
Graver, Wm., Tank Works, East Chicago, Ind.
Hammond Iron Works, Warren, Pa.
Petroleum Iron Works Co., Washington, Pa.
Reeves Bros. Co., Alliance, O.
Sharon Boiler Works, Sharon, Pa.
Tippett & Wood, Phillipsburg, N. J.

Tanks—Grain and Storage
Berquist, A. S., 515 Bedford Ave., Brooklyn, N. Y.
Bethlehem Fdy. & Mach. Co., So. Bethlehem, Pa.
Browning Engineering Co., Cleveland, O.
Caldwell, W. E., Co., Louisville, Ky.
Graver Tank Wks., Wm., E. Chicago, Ind.
McAleenan Boiler Co., Peoria, Ill.
Minneapolis Steel & Mach. Co., Minneapolis.
Petroleum Iron Works Co., Washington, Pa.
Reeves Bros. Co., Alliance, O.
Riter-Conley Mfg. Co., 55 Water St., Pittsburg.
Steel Storage Elevator & Const. Co., Buffalo.
Tippett & Wood, Phillipsburg, N. J.
Warren City Tank & Boiler Wks., Warren, O.
Wood, R. D., & Co., Philadelphia.

Tanks—Septic (See Sewage Disposal)

Tanks and Towers
American Creosote Works, New Orleans, La.
Baltimore Cooperage Co., Baltimore.
Buell & Mitchell, New York.
Caldwell, W. E., Co., Louisville, Ky.
Davis, G. M., & Son, Palatka, Fla.
Des Moines Bdge. & Iron Wks., Des Moines, Ia.
East Jersey Pipe Co., Paterson, N. J.
Fairbanks, Morse & Co., Chicago.
Granger, A. D., Co., New York.
McAleenan Boiler Co., Peoria, Ill.
National Dry Kiln Co., Indianapolis, Ind.
National Wood Pipe Co., Los Angeles, Cal.
Phillips & Worthington, 136 Liberty St., N. Y.
Southwestern Bridge Co., Joplin, Mo.
U. S. Wind Engine & Pump Co., Batavia, Ill.

Tapes—Steel (See Draftsmen's Supplies and Instruments)

Tents and Awnings
Columbus Tent & Awning Co., Columbus, O.
McAuley, J. A., Tent & Awning Co., Columbus, O.
Murray Co., 59 W. Washington St., Chicago.

Testing Machines and Scales
Fairbanks, Morse & Co., Chicago.
Riehle Bros. Testing Machine Co., Philadelphia.
Ulmer, J. C., & Co., 113 Prospect Ave., Cleveland.

Ties—Steel and Wood (See Railway Track Specialties)

Tipples and Bunkers
Berquist, A. S., 515 Bedford Ave., B'klyn, N. Y.
Bergen Pt. Iron Wks., New York, N. Y.
Link-Belt Co., Philadelphia.
Mount Vernon Bridge Co., Mt. Vernon, O.
Pennsylvania Steel Co., Philadelphia.
Penn Bridge Co., Beaver Falls, Pa.
Wellman-Seaver-Morgan Co., Cleveland, O.

Tools—Calking
Dallett, Thos. H., & Co., Philadelphia.
Ingersoll-Rand Co., 11 Broadway, New York.
Smith, A. P., Mfg. Co., Newark, N. J.

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Holman, D. F., Co., Chicago.

Track—Portable (See Railway Track Specialties)

Trench Brace Machines
Duff Mfg. Co., Pittsburg, Pa.
Kalamazoo (Mich.) Foundry & Machine Co.

Trench Machines and Supplies (See Ditching Machinery)

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Boston & Lockport Block Co., Boston.
Koppel, Arthur, 66 Broad St., New York.
Mechanical Mfg. Co., Chicago.
Syracuse Chilled Plow Co., Syracuse, N. Y.

Turbines—Steam
Backus Water Motor Co., Newark.
De Laval Steam Turbine Co., Trenton, N. J.
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Westinghouse Electric & Mfg. Co.
Worthington, Henry R., 114 Liberty St., N. Y.

Turbines—Water
Abner-Doble Co., 200 Fremont St.
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Leffel, Jas., & Co., Springfield, O.
Morris, I. P., Co., Philadelphia.
Pelton Water Wheel Co., San Francisco.
Risdon-Alcott Turbine Co., Mount Holly, N. J.
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Janney, Steinmetz & Co., Philadelphia.
Leschen, A., & Sons Rope Co., St. Louis.
Merrill Bros., Kent Ave., Brooklyn.
New Jersey Foundry & Machine Co.
Scovil Hdw. & Supply Co., 441 Greenwich St., N.Y.
Toledo-Massillon Bridge Co., Toledo.

Turntables
American Bridge Co., 42 Broadway, New York.
Baltimore Bridge Co., Baltimore.
Boston Bridge Works, 47 Winter St.
Brown Hoisting Machinery Co., Cleveland.
Coldwell-Wilcox Co., Newburgh, N. Y.
Hunt, C. W., Co., 45 Broadway, New York.
Interstate Eng'g Co., Bedford, O.
Koppel, Arthur, 66 Broad St., New York.
Link-Belt Co., Philadelphia.
Minneapolis Steel & Mach Co., Minneapolis.
Mo. Valley Bdge. & Ir. Wks., Leavenworth, Kan.
Mount Vernon Bridge Works, Mt. Vernon, O.
New England Structural Co., Boston.
Passaic Steel Co., Paterson, N. J.
Pennsylvania Steel Co., Philadelphia.
Philadelphia (Pa.) Turntable Co.
Phoenix Bridge Co., 410 Walnut St., Philadelphia.
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Strobel Steel Construction Co., Chicago.
Vulcan Iron Works, 47 Milwaukee Ave., Chicago.
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Wonham-Magor Engineering Co., New York.

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Abner-Doble Co., 200 Fremont St., San Francisco.
Bourbon Copper & Brass Works, Cincinnati, O.
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Coffin Valve Co., Boston.
Coldwell-Wilcox Co., Newburgh, N. Y.
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Dimmick Pipe Co., Birmingham, Ala.
Drummond, M. J., & Co., New York.
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Foster Engineering Co., Newark, N. J.
Fox, John, & Co., 253 Broadway, New York.
Golden Anderson Valve Specialty Co., Pittsburg.
Kennedy Valve Mfg. Co., 50 Beekman St., N. Y.
Loetzer Valve & Mfg. Co., Monroeton, Pa.
Lunkenheimer Co., Cincinnati, O.
McGowan, John H., Co., Cincinnati, O.
McLean, John, 440 Water St., New York.
Pittsburg Mfg. Co., 28th St., Pittsburg, Pa.
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Buffalo Forge Co., Buffalo, N. Y.
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Marion Incline Filter & Heater Co., Marion, O.
Power Specialty Co., New York.
Rendle, Arthur E., New York.
Sprague Electric Co., New York.

Ventilators
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Buffalo Forge Co., Buffalo, N. Y.
Burt Mfg. Co., Akron, O.
Irwin, Thos. W., Mfg. Co., Allegheny, Pa.

Wagons—Dump (See Carts)

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Backus Water Motor Co., Newark, N. J.
Caldwell, W. E., Co., Louisville, Ky.
Foundation Co., New York.
Leffel, James & Co., Springfield, O.
Gilbreth, F. B., 24 W. 28th St., New York.
Municipal Engineering & Contracting Co., Chicago.
National Wood Pipe Co., Los Angeles, Cal.
Poole Engineering & Machine Co., Baltimore.
Risdon-Alcott Turbine Co., Mount Holly, N. J.
Wellman-Seaver-Morgan Co., Cleveland, O.

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Hammond Boynton Paint & Chem. Co., Norwich, Conn.
Horn Co., A. C., New York.
Hydrex Felt & Engineering Co., New York.
Theo. F. Koch, Chicago, Ill.
Nubian Paint Co., Chicago.
Sicilian Asphalt Co., 41 Park Row, New York.

Water Softening Plant and Water Purification and Filters
Am. Water Softening Co., 1011 Chestnut St., Phila.
Booth, W. M., Syracuse, N. Y.
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Greer Filter Co., Pittsburg.
Harrison Safety Boiler Works, Philadelphia.
Helwig Mfg. Co., St. Paul, Minn.
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Lynn Filter Mfg. Co., Cincinnati, O.
Loomis-Manning Filter Co., Philadelphia.
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Ransome Concrete Machinery Co., New York.
Shannon, J. Jacob, & Co., Philadelphia.
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Union Iron Works, Hoboken, N. J.
Western Wheeled Scraper Co., Aurora, Ill.

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Kilgore Peteler Co., Minneapolis, Minn.

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Circulars addressed to our keyed advertisers will not be forwarded, as our "Want" advertisers have objected to receiving such matter, and we cannot give the time to forwarding them.

Persons answering want advertisements should not send original documents, but copies thereof.

Our readers and advertisers are asked to help us make these columns of the greatest use to those using them.

SUPERINTENDENT and engineer, 12 years' experience in general construction, heavy excavation, water-works, sewers, dams; thoroughly familiar with hard and soft ground tunnels and plain and reinforced concrete. Good executive and organizer; sober and industrious. Can furnish best of New York references. Address "A. A. 15," Engineering News, New York. 23-4t

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WANTED—Position as superintendent of crushing plant, by married man of ten years' experience. Five years complete charge of four hundred ton plant. Address "I. 25," Engineering News, New York. 25-2t

ASSISTANT SUPERINTENDENT, Technical graduate, age 27, married; 6 years' experience on dams, water-works, reinforced concrete, sewers, tunnels, sewage disposal plants, etc. Go anywhere. Address "L. 25," Engineering News, New York. 25-tf

POSITION WANTED as inspector or superintendent on construction work near New York City. Graduate engineer, thirty years of age. Address "M. 25," Engineering News, New York. 25-4t

RUSSIAN CIVIL ENGINEER, college graduate (26), about two years' experience in designing reinforced concrete in America; competent and honest; at present employed; wishes position with reinforced concrete concern to become later their representative in Russia or Siberia. Best references in either country. Address "A. A. 25," Engineering News, New York. 25-2t

YOUNG MAN (21), engineering student, desires position in a New York engineering office; experienced in bookkeeping and office work; thorough academic training; good penman; best references. Address "I. 26," Engineering News, New York. 26-2t

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REINFORCED CONCRETE ENGINEER, with architectural ability, four years' experience, wants position. Salary, $20.00 per week. Address "X. 26," Engineering News, New York. 26-2t

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See Construction News page 202.

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WANTED—Superintendent for a Trap Rock Crushing Plant in New Jersey; must be an all round man, of good executive ability, and familiar with both quarrying and handling machinery; give experience and salary wanted. Address "W. A. 20," Engineering News, New York. 23-4t

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WESTERN REPRESENTATIVE of well-established New York house desires to take on other good selling lines and work in conjunction. Best references exchanged. Address "X. Y. 24," c/o Engineering News, Monadnock Block, Chicago, Ill. 24-3t

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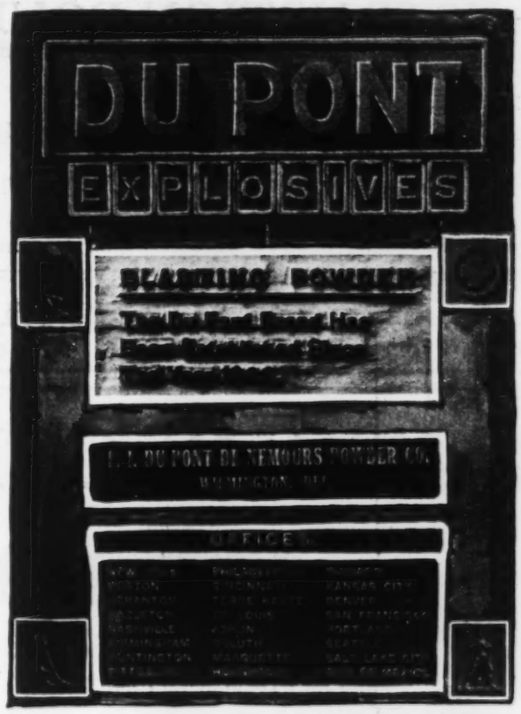

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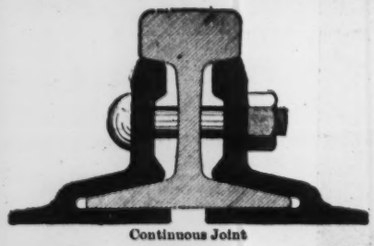

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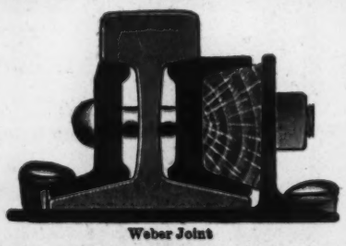

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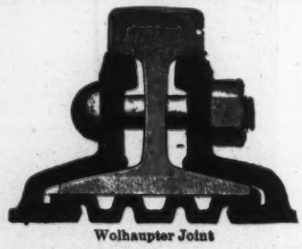

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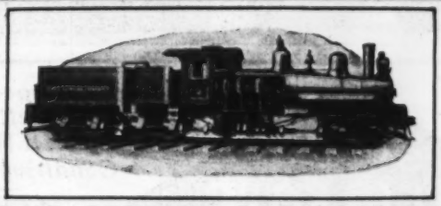

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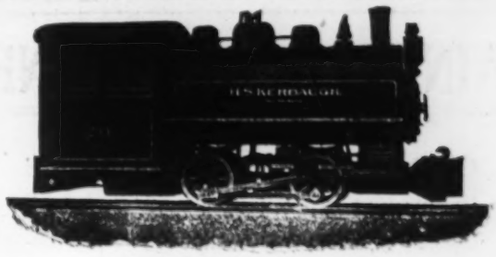

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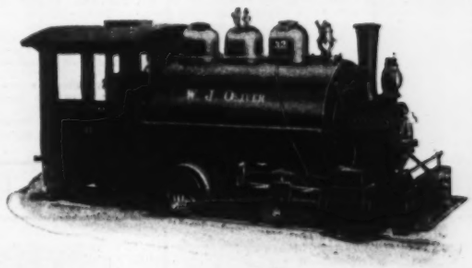

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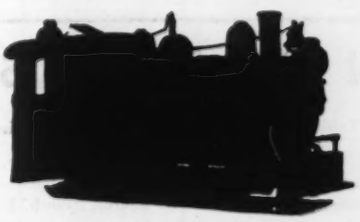

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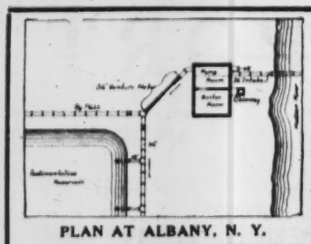

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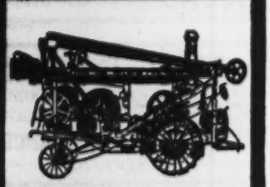

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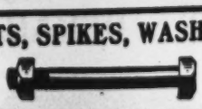

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DRAINAGE DITCHES.

Greenwood, Miss.

The contract for the construction of the main drains of the Jones-Walton Drainage District of LeFlore County, Mississippi will be let to the lowest responsible bidder at the Court House in Greenwood, Mississippi at noon on the 31st day of December, 1907.

The work to be done is clearing the right of way and digging about six miles of ditches requiring the removal of about 66,000 cu. yds. of dirt as estimated by the engineer. The work to be completed in two years, or less, as may be agreed upon; and payments on the contract will be made monthly, as the work proceeds, but never for more than eighty per cent. of the work completed to that time.

The contractor will be required to enter into contract for the faithful performance of said work according to the plans, specifications, profiles and estimates of the engineer and the orders of the Drainage Commissioners of LeFlore County, Mississippi, on file in the Chancery Clerk's office in Greenwood, Miss., and to give bond in the amount of his contract for the faithful performance of said work within the time and manner specified in the contract.

Sealed bids for doing this work will be received by the Drainage Commissioners up to noon of Dec. 31, 1907.

This Dec. 5th, 1907. G. W. HOLMES,
President.
25-2t

WATER-WORKS, SEWERS AND ELECTRIC LIGHT BONDS.

Madison, Ga.

Bids will be received by the undersigned until Tuesday, Dec. 31st, 1907, at five o'clock P. M., for the purchase of the whole or any part of Fifty Thousand ($50,000.00) Dollars of Water-Works, Sewerage and Electric Light Bonds for the City of Madison, Ga.; said Bonds will bear interest at the rate of four and one-half (4½%) per cent. per annum, payable semi-annually, July 1 and January 1, in Madison, Ga., or in New York, at option of holder; will be dated January 1, 1908, and payable Fifteen Thousand Dollars January 1, 1018; Fifteen Thousand Dollars January 1, 1928, and Twenty Thousand Dollars January 1, 1938—straight bonds; denomination One Thousand Dollars each. May be registered or coupon. Bonds Legally Validated and Legality Can Never Be Questioned and Are Free from All Taxation. No bid received for less than par value. Purchaser to pay cost of printing bonds. Certified check of two per cent. of bid must accompany the same. The right to reject any and all bids reserved. Bonds not optional for retirement but run full time.

City of Madison has never defaulted on interest or principal. Total bonded indebtedness, including this issue, $75,000.00; assessed value of property for taxation, $1,800,000.00. Address,

E. W. BUTLER, Mayor,
25-2t Madison, Ga.

DEPARTMENT OF THE INTERIOR Office, Superintendent, U. S. Capitol Building and Grounds, Washington, D. C., November 23, 1907. In accordance with the terms of the advertisement issued by this office, and dated November 21, 1906, calling for equipment for the Heating, Lighting and Power Plant for the U. S. Capitol and Congressional Buildings, proposals will be received and publicly opened at this office at 12 o'clock noon, Wednesday, January 15, 1908, for Boiler Feed Pumps, Barometric Condensers, Centrifugal Pumps, Motors, Cranes and Chimneys. Bids will be submitted for each item separately. Each proposal must be in duplicate and accompanied by a certified check or approved surety bond in the sum of five per cent. (5%) of the total amount of the bid. The right is reserved to reject any or all bids, and to waive technicalities or informalities. ELLIOTT WOODS, Superintendent U. S. Capitol Building and Grounds. 23-4t

OFFICE CONSTRUCTING QUARTERMASTER, U. S. A., 263 Summer Street, Boston, Mass., December 16, 1907.—Sealed proposals, in triplicate, will be received at this office until 10 o'clock A. M., January 14, 1908, and then opened, for the construction, plumbing, heating, electric wiring and electric lighting fixtures of one Brick Barrack Building at Fort Andrews, Peddock's Island, Boston Harbor, Mass. Plans can be seen, and specifications, blank forms and all information obtained at this office. United States reserves the right to reject any or all proposals. Envelopes should be endorsed "Proposals for Barrack Building, Fort Andrews, Mass.," and addressed to CAPTAIN IRA L. FREDENDALL, Constructing Quartermaster. 24-4t

CONSTRUCTION OF QUARTERS.—Fort Wood, N. Y. H., December 14, 1907.—Sealed proposals, in triplicate, for the construction, including plumbing, heating, electric wiring and electric lighting fixtures, for one double set of Captains' quarters at this post, will be received here until 11.30 a. m., January 13, 1908, and then opened. Information furnished on application. The U. S. reserves the right to reject any or all bids. Envelopes should be marked "Proposals for Public Building" and addressed to the undersigned. G. C. BURNELL, Constg. Qr. Mr. 25-4t

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STEAMBOAT LANDING.

Office of the Erie Dock Commission.
Created by Act of June 13, 1907, P. L. 632.
Erie, Pa., Dec. 14, 1907.

Sealed proposals, addressed to Clark Olds, President of the Erie Dock Commission, Erie, Pa., and endorsed "Proposal for State Street Extension," will be received at the office of the Commission (Chamber of Commerce rooms) until three o'clock p. m. of February 4, 1908, and then publicly opened.

The work will consist in furnishing all labor and material for the construction and completion of a public steamboat landing at the Port of Erie, about 548 feet long and 100 feet wide; and will include all dredging, timber, cribs filled with rock, filling between cribs, concrete walls and brick pavement.

Each proposal must be made on a printed form, which, together with information for bidders, form of contract and specifications, will be furnished on application.

Each bidder must send with his proposal a certified check or a certificate of deposit of some National Bank, made payable to the Commission, for the sum of Four Thousand ($4,000.00) Dollars.

The Commission reserves the right to reject any or all proposals.

M. H. TAYLOR,
HON. FRANK D. SCHULTZ,
HENRY BECKMAN,
E. C. SIEGEL,
CLARK OLDS,
Commissioners.
H. T. LEASURE, Secretary. 25-3t

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., December 16, 1907.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 20th day of January, 1908, and then opened, for the construction (complete) of the extension to the U. S. Post Office and Court House, Asheville, North Carolina, in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Custodian of the building at Asheville, North Carolina, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 25-2t

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., December 16, 1907.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 21st day of January, 1908, and then opened, for the construction (complete) of the U. S. Post Office, at Gainesville, Georgia, in accordance with the drawings and specification, copies of which may be had at this office, or at the office of the Postmaster at Gainesville, Georgia, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 25-2t

PROPOSALS FOR DUMP SCOWS.—U. S. Engineer Office, Wilmington, N. C., December 10, 1907.—Sealed proposals for two six-pocket bottom dump scows will be received at this office until 12 o'clock M., January 10, 1908, and then publicly opened. Information furnished on application. EARL I. BROWN, Captain, Engineers. 24-4t

U. S. ENGINEER OFFICE, 22d and K Sts., N. W., Washington, D. C., Dec. 12, 1907.—Sealed proposals for dredging in Rappahannock River, Va., will be received here until 12 M., Jan. 11, 1908, and then publicly opened. Information furnished on application. SPENCER COSBY, Major, Engrs. 25-4t

DRAINAGE DITCHES.

Greenwood, Miss.

The contract for the construction of the main drains of the Ellsberry Drainage District of LeFlore County, Mississippi will be let to the lowest responsible bidder at the Court House in Greenwood, Mississippi at noon on the 31st day of December, 1907.

The work to be done is clearing the right of way and digging about eleven miles of ditches requiring the removal of about 178,000 cu. yds. of dirt as estimated by the engineer. The work to be completed in two years, or less, as may be agreed upon; and payments on the contract will be made monthly, as the work proceeds, but never for more than eighty per cent. of the work completed to that time.

The contractor will be required to enter into contract for the faithful performance of said work according to the plans, specifications, profiles and estimates of the engineer and the orders of the Drainage Commissioners of LeFlore County, Mississippi, on file in the Chancery Clerk's office in Greenwood, Miss., and to give bond in the amount of his contract for the faithful performance of said work within the time and manner specified in the contract.

Sealed bids for doing this work will be received by the Drainage Commissioners up to noon of Dec. 31, 1907.

This Dec. 5th, 1907. G. W. HOLMES,
25-2t President.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., December 1, 1907.—Sealed proposals will be received at this office until 3 o'clock P. M. on the 18th day of January, 1908, and then opened, for the installation of a vacuum cleaning system for the U. S. Post Office, Court House and Custom House, Providence, R. I., in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Architects, Clark and Howe, 72 Waybosset St., Providence, R. I., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect. 26-2t

SALE OF CONDEMNED PUBLIC BUILDINGS.—Office of the Quartermaster, Fort Wood, Bedloes Island, N. Y. H., Dec. 10, 1907.—Sealed proposals in triplicate for purchase and removal of four buildings, viz.: Double Lieutenants Quarters, Barracks, Stable, and Recreation Hall, at this Post, will be received here until 1.30 P. M., Jan. 13, 1908, and then opened. Information furnished on application. Envelopes containing proposals should be marked "Proposals for Buildings," and addressed 1ST LIEUT. WM. W. BESSELL, Signal Corps. 25-4t

SEALED PROPOSALS.—Fort Monroe, Va., December 2d, 1907.—Sealed proposals, in triplicate, for the reconstruction of Mill Creek Bridge, Fort Monroe, Va., will be received at the office of Constructing Quartermaster until noon, January 6, 1908. The United States reserves the right to accept or reject any part or all proposals, or any part thereof. Information furnished on application. Bids should be plainly marked as such on the outside wrapper or envelope. Address CAPTAIN ERNEST R. TILTON, Constructing Q. M. 24-3t

WANTED.—Bids for excavating 24.88 miles of ditch containing approximately 903,994.3 cubic yards of earth. Time for filing bids expires Jan. 16, 1908. For full instructions to bidders, write W. B. ANGELO, Plainfield, Wis. 26-1t

BASCULE BRIDGE.

New Orleans, La., Nov. 21st, 1907.

Pursuant to ordinance No. 4551 and 4832 N. C. S., sealed proposals will be received at the office of the Comptroller in the City of New Orleans until the hour of 1 p. m., Thursday, January 2d, 1908, for the erection of a Bascule Trunion Bridge over the Bayou St. John at the intersection of Esplanade Avenue, in accordance with plans and specifications on file in the office of the City Engineer. Deposit $1,500.00 with the City Treasurer, and his receipt enclosed with bid, or certified check for said amount. Bond in an amount equal to twenty-five (25) per cent. of the contract price.

The City Engineer will furnish bidders with a blank form of proposal; no proposal will be considered unless submitted on such form. Bidders must have paid their City License in order that their bid may be accepted.

The City reserves the right to reject any and all bids.

Terms Cash.

CHARLES R. KENNEDY,
22-5t Comptroller.

For other
PROPOSAL ADVERTISEMENTS
See Pages 51, 54 and Construction News, page 202.

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Now, as for open heaters! If you are about to purchase an open heater *let us set a Cochrane down on the floor in your plant* alongside any other heater that you were thinking of buying, and then you can draw your own conclusions and make your own choice. We will direct your attention to a few points. Take first the oil Separator. Cochrane Oil Separators, one of which is attached to every Cochrane Heater, now protect over eight million HP. boilers from oil. Over 12,000 Cochrane Separators are in every day use. The shelves and trays of a Cochrane Heater are made of cast-iron plates, which are practically immune to rust and corrosion. A Cochrane Heater has plenty of storage, settling and filtering capacity. Measure it up. It has plenty of steam and tray surface so that it will give full temperature to the feed, even when operating at 100% overload. It is accessible. There are no internal compartments. Suitable doors enable a man to get into even the smallest heater. The accumulation of scale-forming matter is easily shoveled out. There is a reliable overflow and skimmer, a high class double seated cold-water regulating valve, a ventilated copper float for controlling this valve, and an anti-syphonig pump-supply device which prevents sediment and dirt from being drawn over into the boiler feed pumps. There are many other points, but we have not space for them here. Send for our catalogue "41-H."

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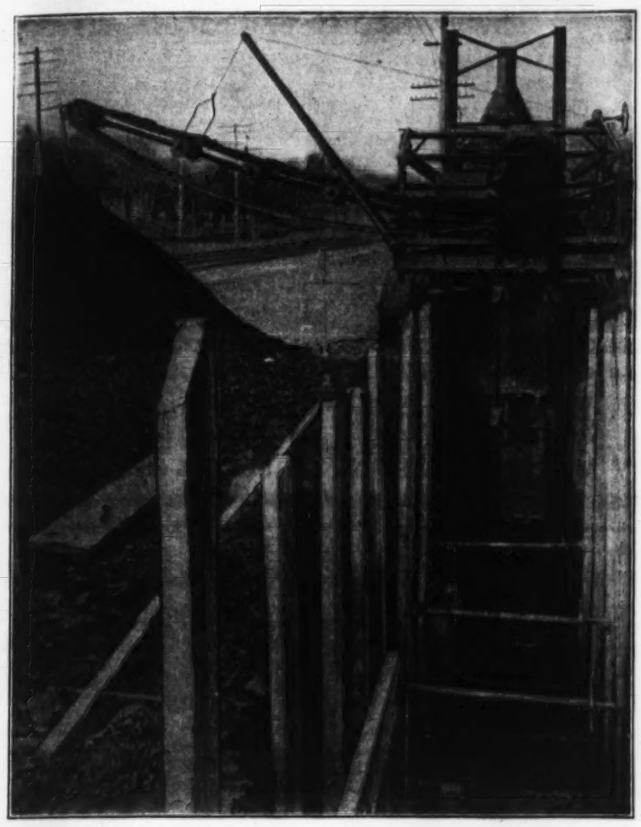

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Detailed information of the construction and capacity of these machines will be cheerfully furnished.

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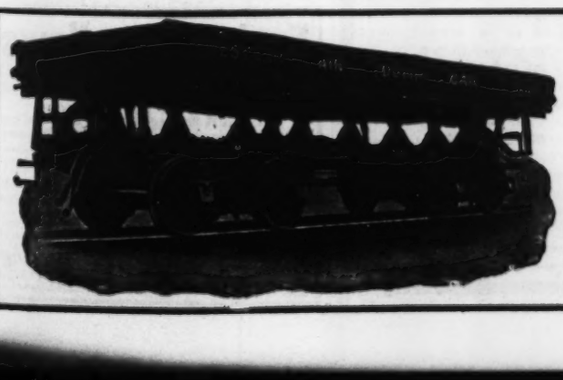

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DRAINAGE TUNNEL.

Colorado Springs, Colo.

Bids will be received for the driving of about 14,000 feet of deep drainage tunnel, to be 7 × 10 feet, also the sinking of about 600 feet of shaft, to be 5 × 10 feet in the clear, in the Cripple Creek Mining District.

Bidding will close on January 15th, 1908.

Address E. D. MARR, Secretary, Colorado Springs, Colorado, for specifications. 26-3t

STEEL BRIDGE.

Nashville, Tenn., Dec. 20, 1907.

Sealed proposals will be received by the Cumberland River Bridge Committee of the Davidson County, Tenn., County Court, at its office, Room 48, Cole Building, in the city of Nashville, Tenn., until 3 o'clock P. M., Jan. 22, 1908, for the following steel bridge work:

For furnishing all materials and the manufacture and erection of steel spans listed below:

Four spans deck plate girders 53 ft. 2 ins. center to center of bearings.

One span deck plate girder, 70 ft. center to center of bearings.

Two Rolled I-Beam spans.

Four Through Truss Spans 175 ft. center to center end pins.

One Deck truss 98 ft. 7 ins. center to center end pins.

Two 318-ft. Through Truss Spans.

These spans are to be erected in two bridges across Cumberland River, in Nashville, Tenn. They are to be extra heavy highway structures and the tonnage required will be about 3,000 tons.

A certified check for the sum of five thousand dollars ($5,000.00) payable to the order of the County Trustee of Davidson County, must accompany each bid as a guarantee the bidder will enter into a contract to do the work as specified and furnish the required bond, in case the work is awarded him. Where only a portion of the work is bid on, a certified check of 3% of the amount of the bid will be required.

The right is reserved by the Committee to let all the work to one bidder or to let it in parts as provided for in the proposal. The right is also reserved by the Committee to reject any or all bids received.

Plans and specifications for the work may be seen at the office of the Committee, or will be mailed to responsible parties on receipt of a deposit of $10.00.

J. K. RAINS, Chairman.
H. M. JONES, Engineer. 26-4t

U. S. ENGINEER OFFICE, Room 415, Custom House, Cincinnati, O., December 20, 1907.—Sealed proposals for raising crest of Lock and Dam No. 3, Big Sandy River, near Louisa, Ky., and constructing steel gates for the lock, will be received here until 2 P. M., standard time, January 20, 1908, and then publicly opened. Information furnished on application. J. G. WARREN, Lieut.-Col., Engrs. 26-3t

U. S. ENGINEER OFFICE, Wheeling, W. Va., December 27, 1907.—Sealed proposals for constructing guide walls, grading, paving, etc., at Dam No. 13, Ohio River, will be received at this office until 11 A. M. (Eastern time), January 25, 1908, and then publicly opened. Information furnished on application. F. C. BOGGS, Capt., Engrs. 26-4t

For other PROPOSAL ADVERTISEMENTS See Pages 51, 54 and Construction News, page 202.

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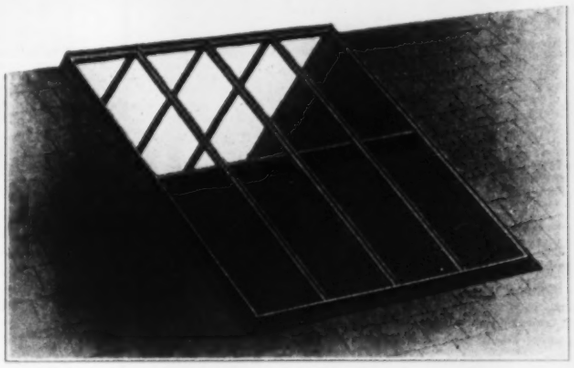

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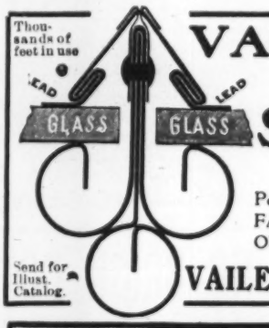

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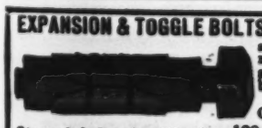

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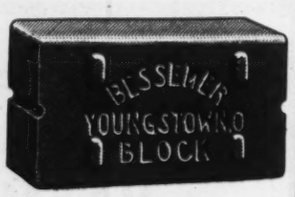

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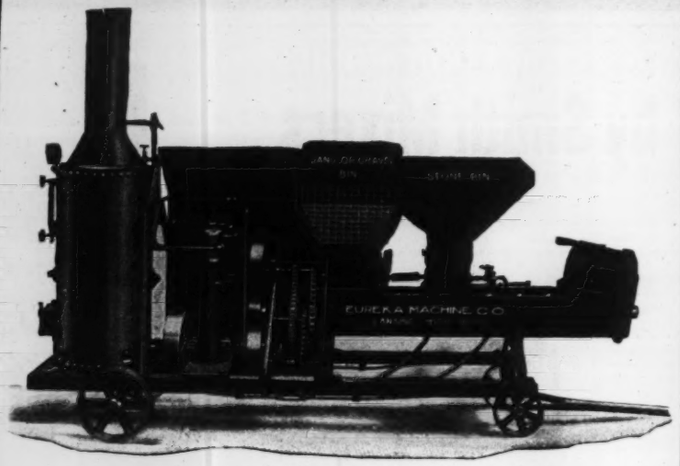

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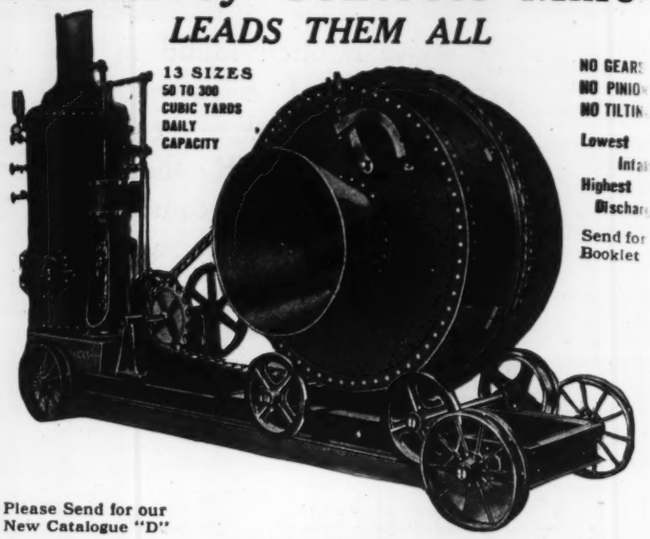

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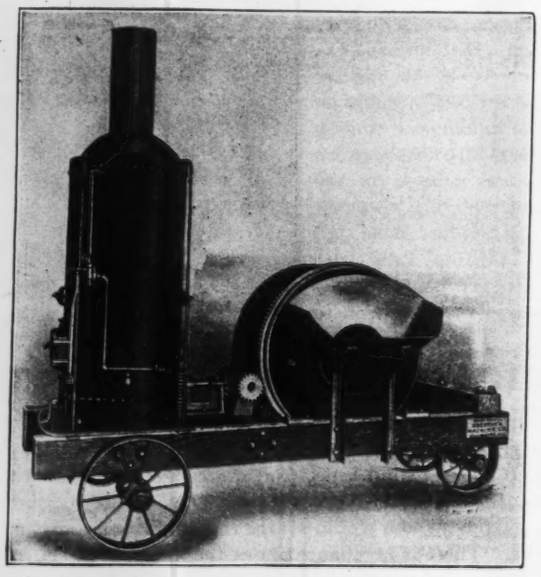

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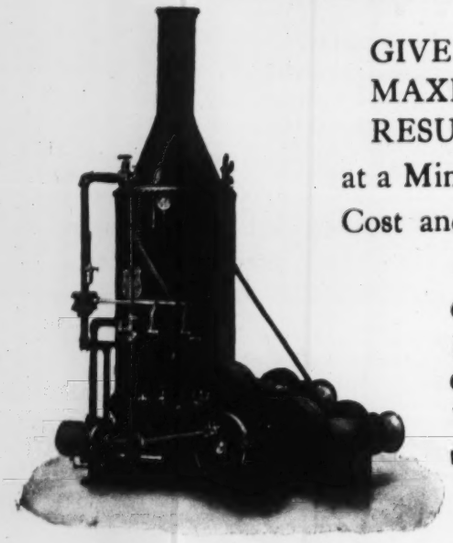

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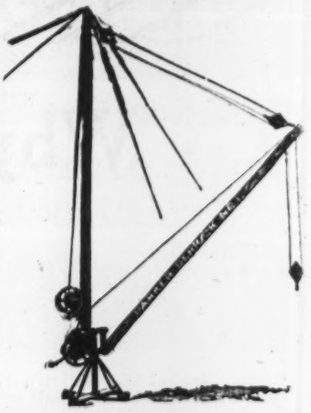

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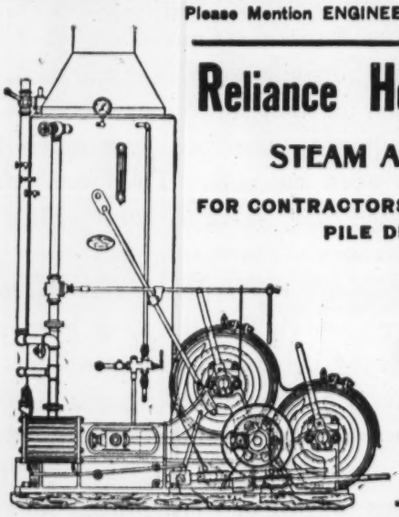

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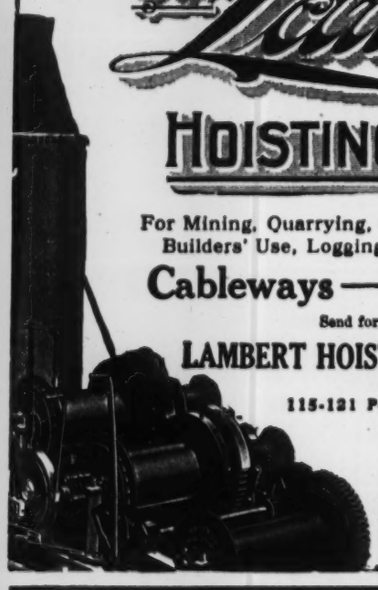

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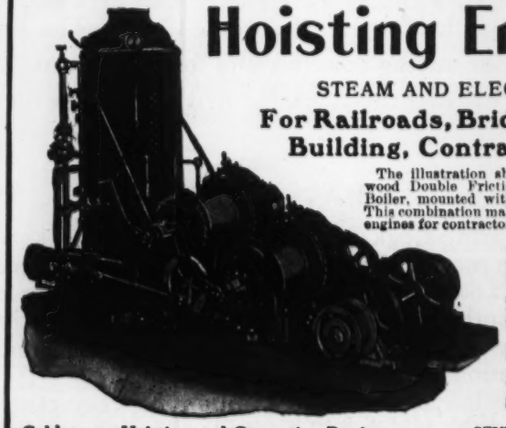

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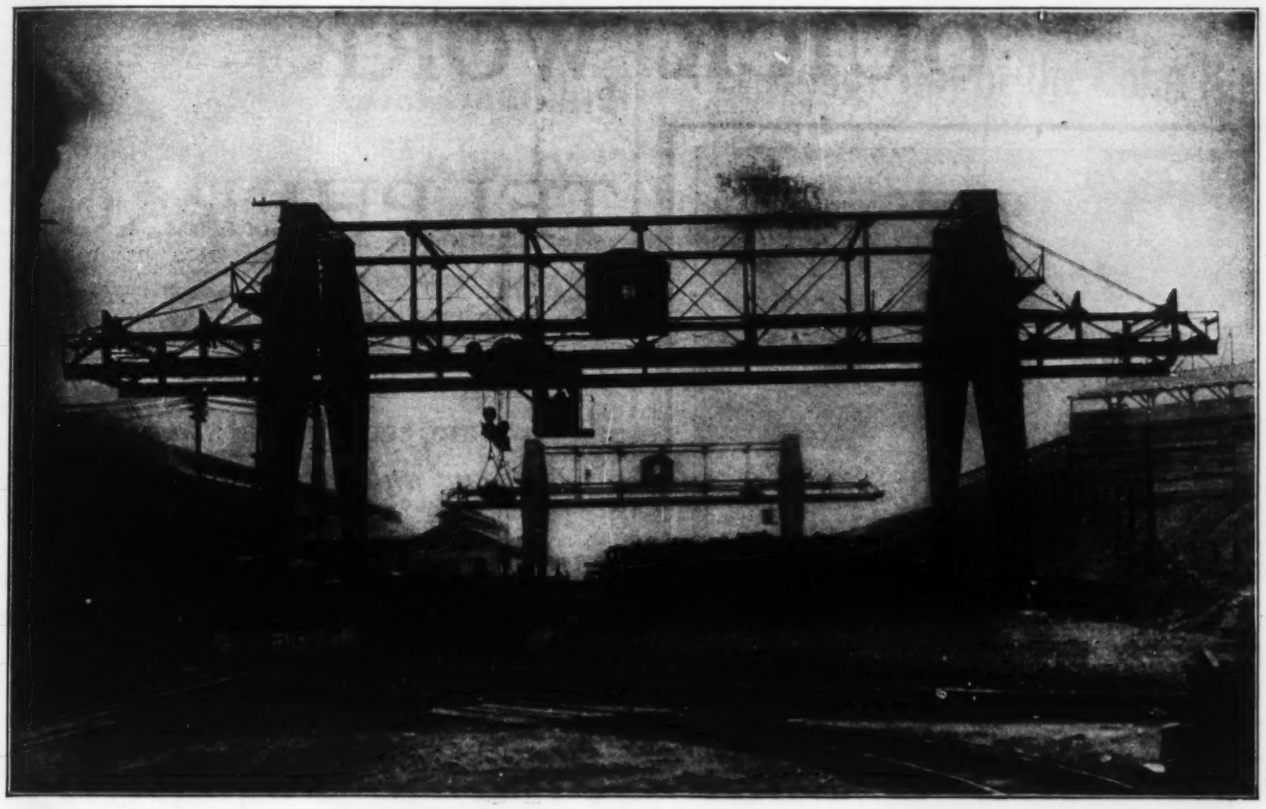

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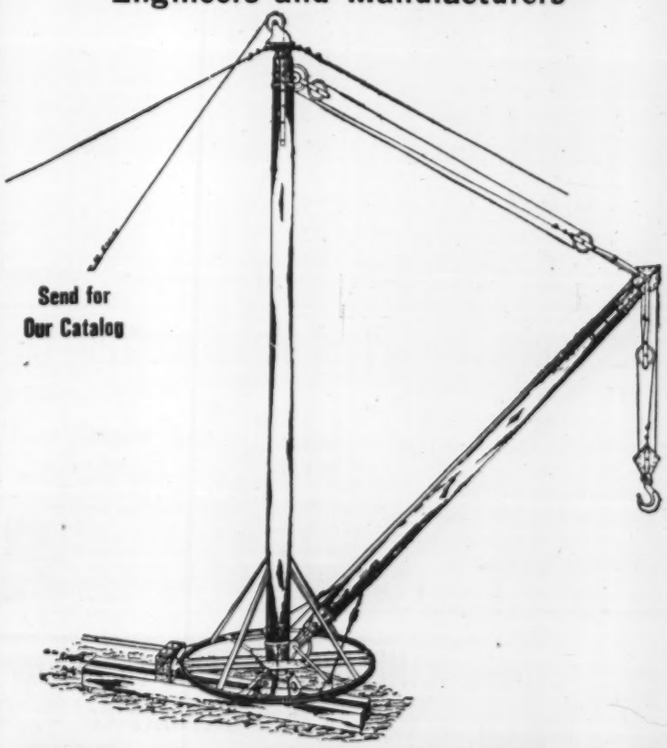

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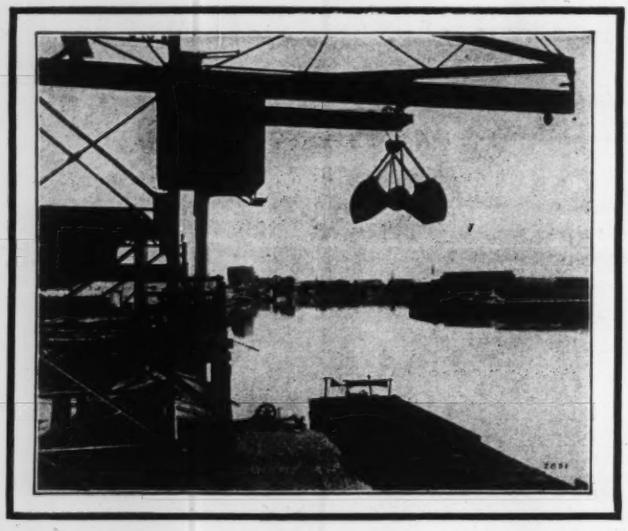

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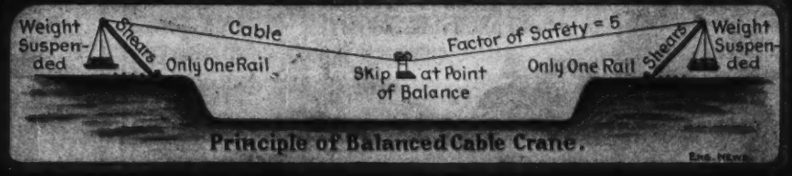

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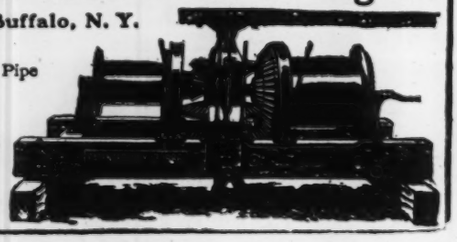

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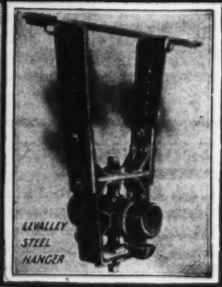

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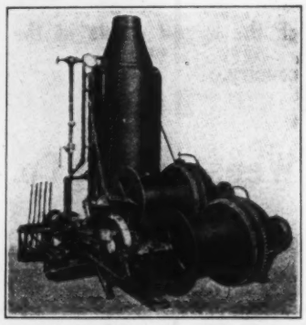

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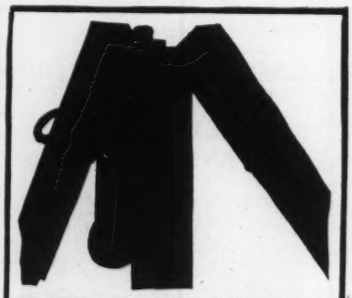

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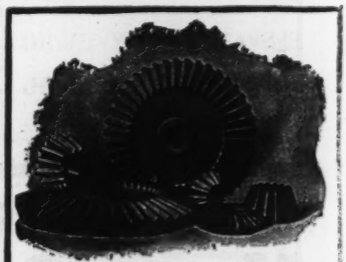

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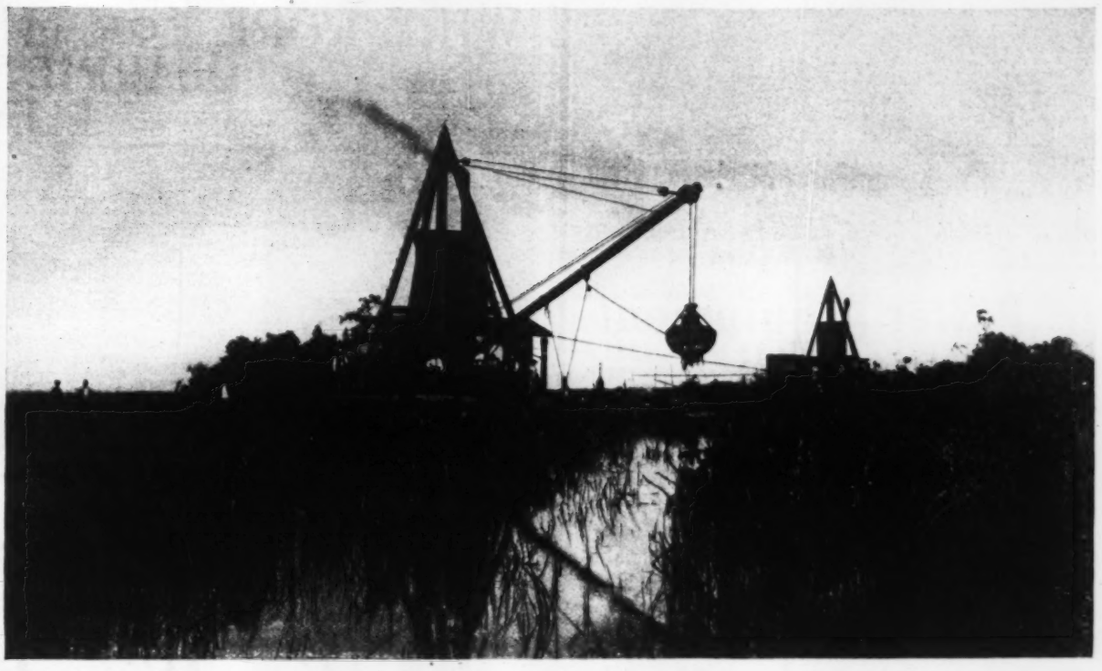

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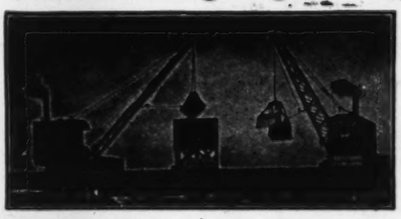

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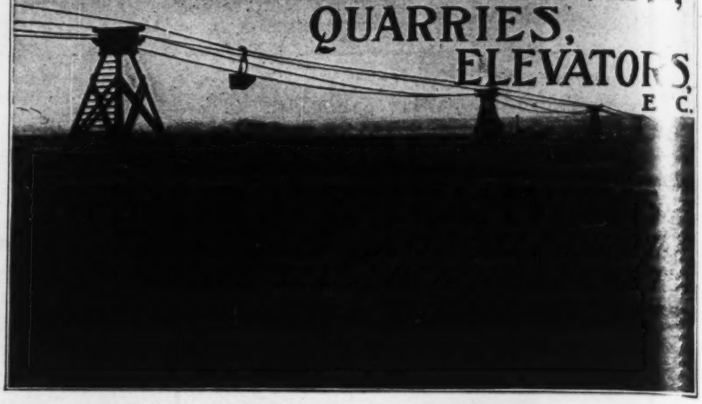

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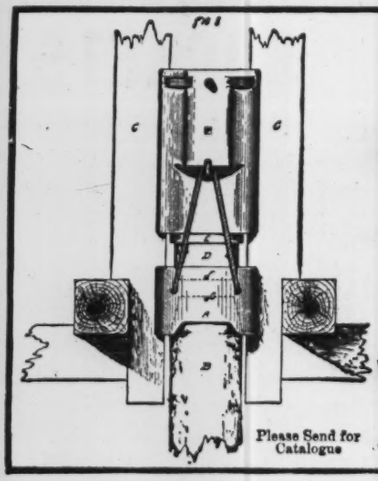

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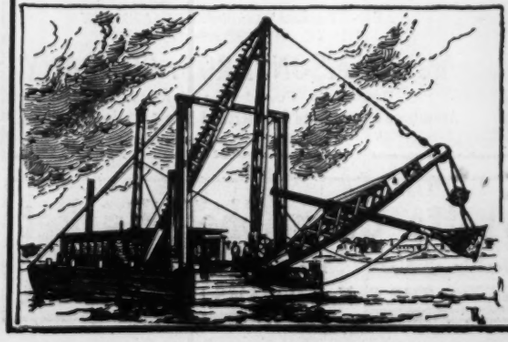

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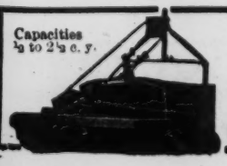

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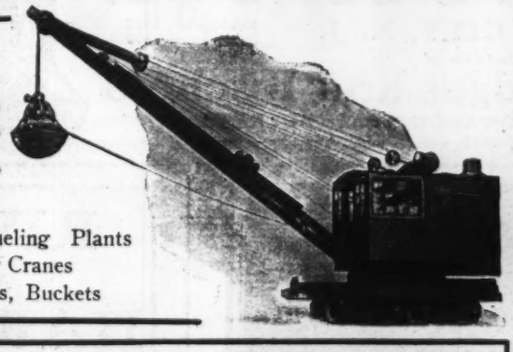

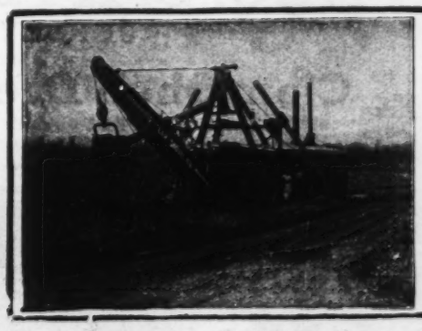

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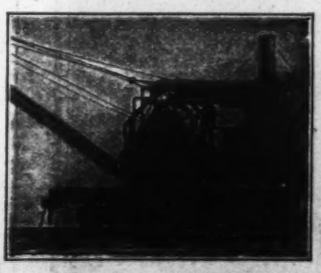

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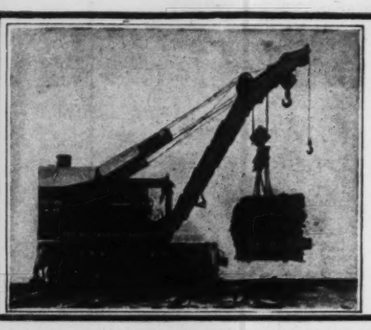

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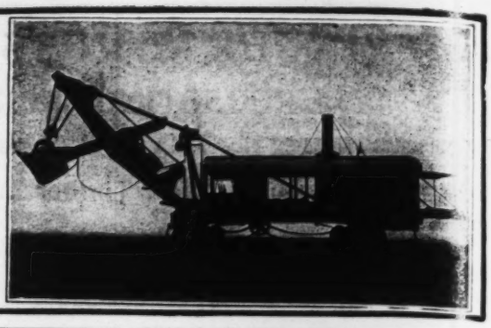

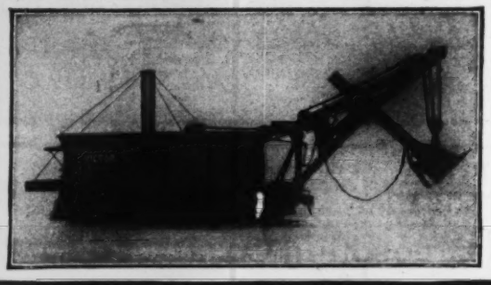

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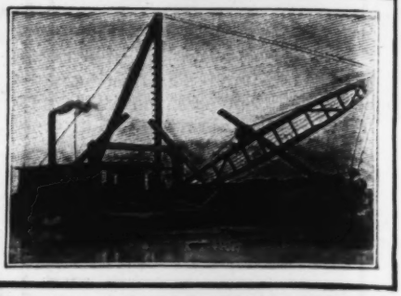

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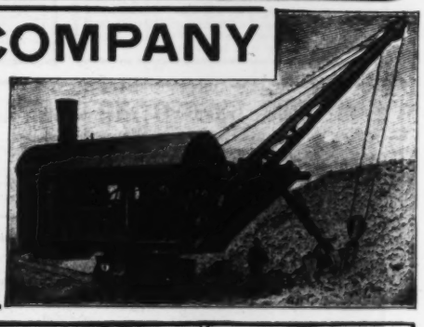

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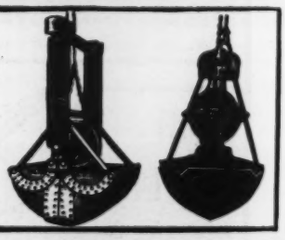

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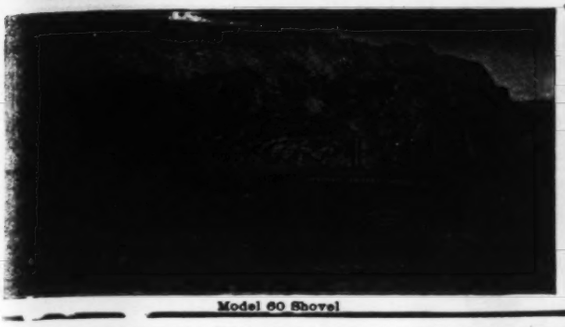

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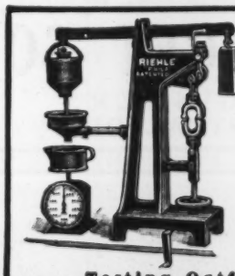

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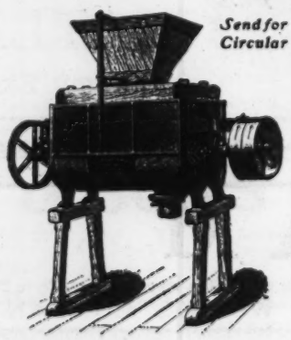

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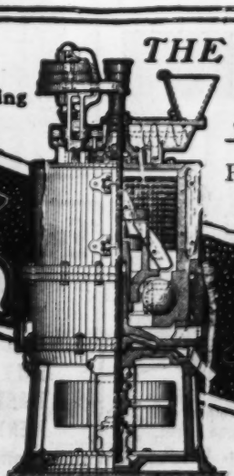

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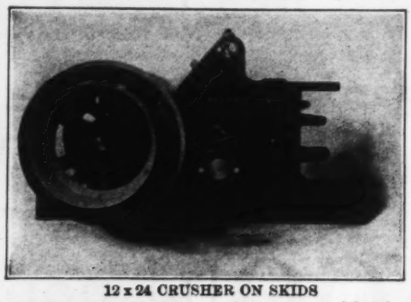

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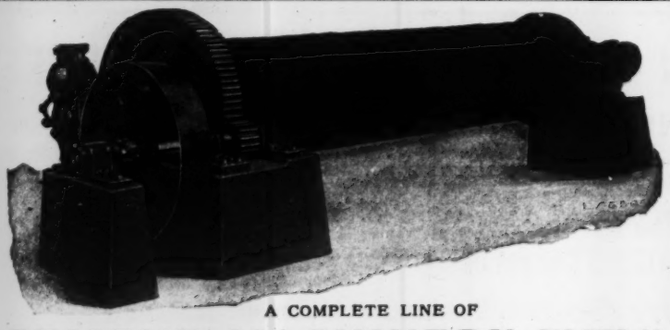

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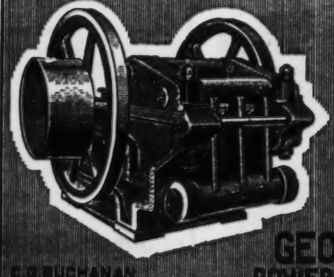

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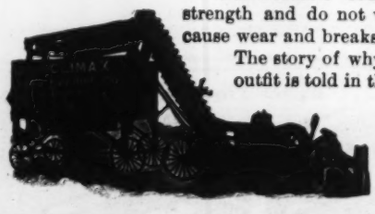

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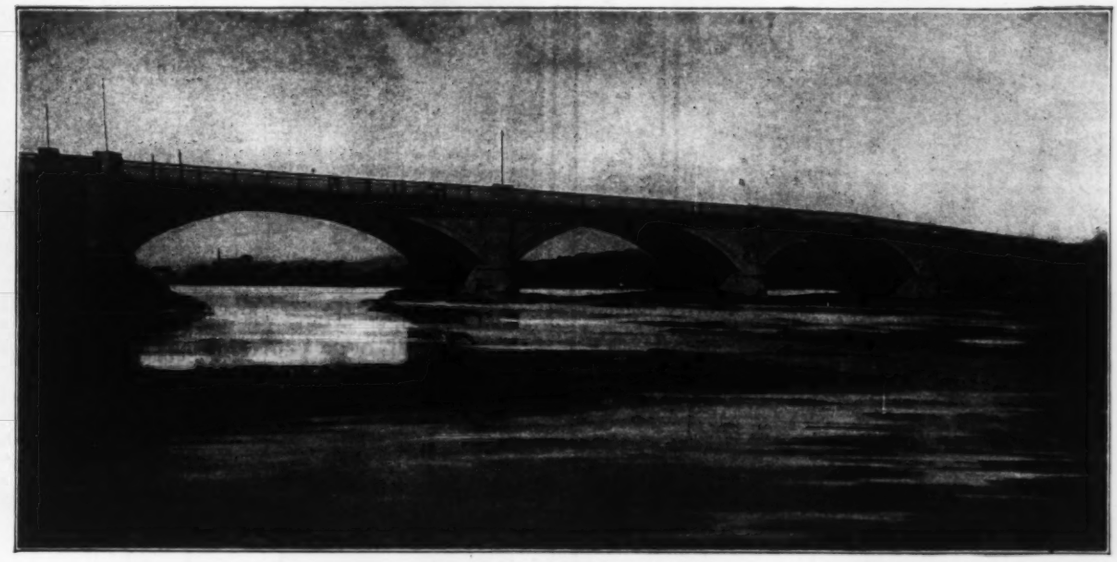

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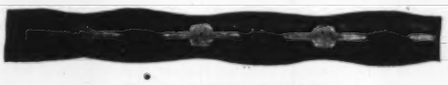

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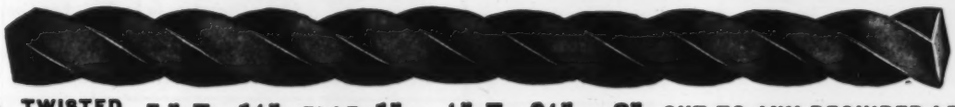

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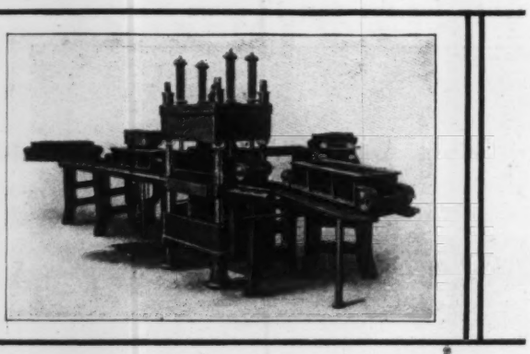

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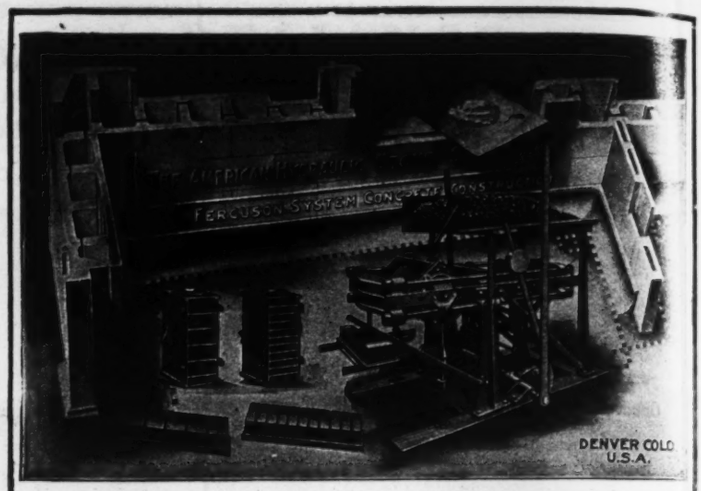

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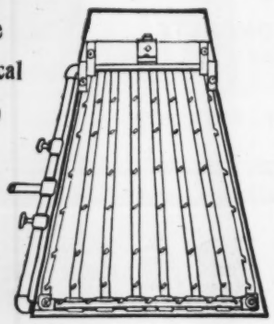

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will heat a batch of frozen concrete materials in two minutes so that their temperature, deposited in a twelve inch wall in zero weather, will be above freezing for twenty-four hours.

Gives all the advantages of a charging hopper.

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W. B. E. IS A PERFECT WATERPROOFING

when mixed with cement mortar. It mixes easily, closing all the cement pores and making it waterproof.

W. B. E. can be used on dry or wet walls and against any water pressure.

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W. B. E. is better and cheaper than other waterproofing materials. It is successfully applied in waterproofing buildings, tunnels, reservoirs, breweries, tanneries, paper mills, etc.

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"Solvay" Chloride of Calcium

Useful in Concrete Construction Work. Prevents Freezing During Winter Weather.
Allows Operations to be Carried on Continuously.
Adds to Strength of Concrete. Does Not Cause Efflorescence.
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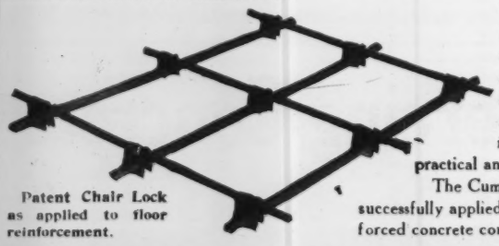
Loop Trusses, Hooped Columns, Anchor Rods, Chair Locks for Columns, Girders, and Floor Construction.



Patent Chair Lock as applied to floor reinforcement.

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Its square shoulders give a common sense, straightforward bond that impresses you with its strength. You don't have a "brain storm" trying to figure out whether it twists before it wedges or wedges before it twists. ***There is no excess metal—every ounce is available for tensile strength.***

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WE POSITIVELY CAN MAKE **PROMPT SHIPMENT** of all sizes, ¼ in. to 1½ in. Large stock in New York City

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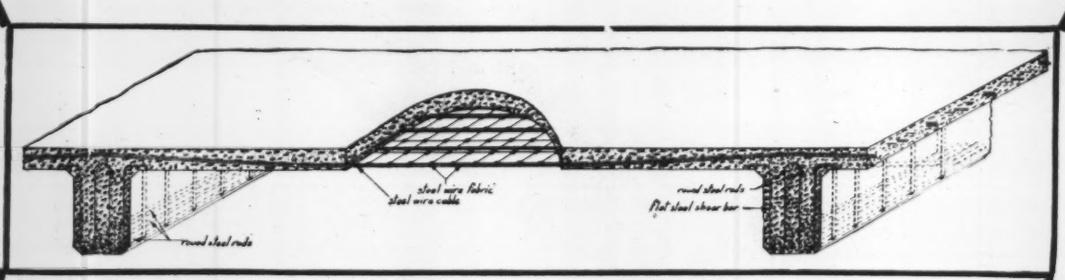
Consists of steel wire fabric and steel cables that provide the ideal continuous reinforcement throughout the entire floor or roof. The wire used in both cables and fabric is of special quality, high in elastic limit and tensile strength. Such material is more economical than rolled metal; furthermore, it is trustworthy.

Our fabric is "hand made" and wire is not damaged by high tension looms or by heat incidental to welding. This cannot be said of any other wire fabric on the American market.



It matters not whether the supporting members for the floor construction are of structural steel, structural concrete steel or walls, for by our method the floors are placed in the same manner. The installation of the reinforcing members is simple, requiring no skilled labor and in point of speed this system is unapproached.

If you are not already on our mailing list it will pay you to send for our Catalog "D," and other interesting literature.

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MONOLITH STEEL COMPANY, INC.

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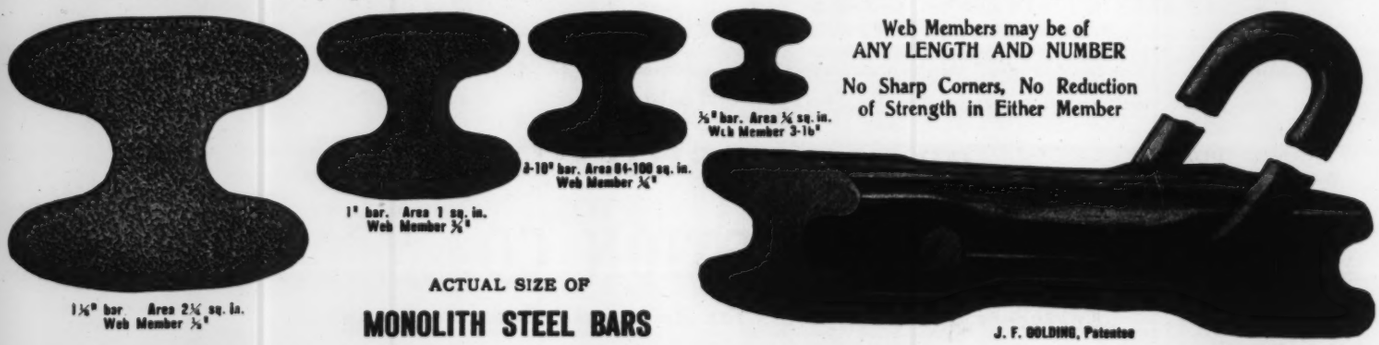
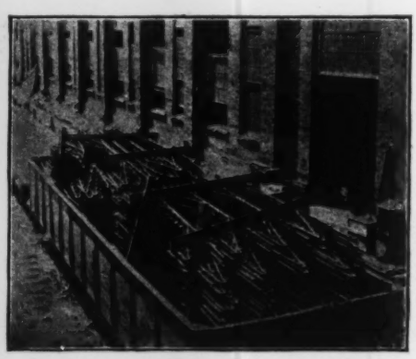
Web Members Attached, Lying Flat for Transportation

Adapted to Any Design of Concrete Construction


1½" bar. Area 2¼ sq. in. Web Member ⅜"
1" bar. Area 1 sq. in. Web Member ⅜"
⅞-10" bar. Area 84-100 sq. in. Web Member ⅜"
½" bar. Area ¼ sq. in. Web Member 3-16"
Web Members may be of ANY LENGTH AND NUMBER
No Sharp Corners, No Reduction of Strength in Either Member
J. F. GOLDING, Patentee

ACTUAL SIZE OF

MONOLITH STEEL BARS



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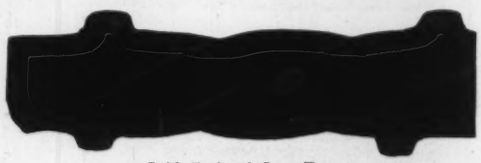

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We have the bars in stock and can make delivery.

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Boston, New York, Philadelphia, Washington, New Orleans, Chicago, St. Louis, San Francisco.

PROCRASTINATION STEALS BOTH TIME AND MONEY

About a year ago we inserted an advertisement in this paper which read as follows:

"It is a fact somewhat difficult to account for that many contracts for dams are deferred until August to November," and, argue as we may, he is wise, usually says, "Low water comes from August to November," and, argue as we may, he insists on postponing the actual closing of a contract until "low water." Then he signs and trouble commences.

New plant has often to be ordered and cars to ship it in. During the recent car famine one of our plants was in transit four weeks.

Our superintendents are at work all over the country, and we have to "juggle" to secure the man best fitted for a particular job.

Labor in the autumn is invariably higher than in the spring—hard to get at that, and, when secured, usually "skim milk."

As a result, by the time work is fairly under way, the low water season is half gone. Fall rains threaten floods, days shorten, cold increases, extra expense is involved in heating material, the efficiency of labor is cut down and the job is landed up in the winter in a half-finished condition, and has to be laid off till spring or is carried through at greatly increased cost.

Now we point out that in most dams half the work is done on dry land, anyway, so that it can be commenced at any time. Rivers usually reach normal flow during May, and we emphasize that the cost of handling a foot or so of extra water is trifling, as compared with the aggregate of losses incurred by postponing work until cold weather.

The time to place your contract is NOW. Then we can deliberately perfect our plans and organization, get our plant and material on the ground, buy cement below the market, take our pick of the spring labor market at bottom prices, get our shore work well under way, so that when low water does come we are ready for low water work at the best advantage—all of which is good business for you. Don't make plans overnight and expect to execute them the next day. Design carefully and think twice. You foot the bills: therefore be wise.

It is a truism that gratuitous advice is not usually acceptable unless it agrees with one's own preconceived ideas, and yet we submit to you that the advice which comes from those who are enriched by experience certainly demands consideration. The experience which a year ago dictated the advertisement above outlined has been further increased by the events of the season just finishing, and which have fortified us in our judgment and our position. We beg, therefore, to be allowed to reiterate that the time to place a contract for any hydraulic development is during the winter months. That means NOW.

We do not wish you to understand that the advice given a year ago was neglected by everyone of our clients who contemplated developments this year. Not at all! The effect was quite the reverse. We had many inquiries and were busy through the early part of last winter on preliminary plans. Some of these resulted in contracts early in the season, and those who did contract at that time are now well satisfied that their course was a wise one.

We began construction on new work as early last year as February, with snow on the ground and ice in the rivers. We were able to build coffer dams through the ice at a low cost, while the river was low—in one instance for half the cost originally estimated. At this period of the year the railroads were not congested with freights as they were later and we were able to get our construction plant on the ground without delay. In one particularly difficult situation we were able to haul our plant several miles from the railroad to its destination on sleds—a very economical procedure when one considers that the mountain roads in that instance were difficult and, in the spring, almost impassable. By that time we had plant and supplies on the ground sufficient to last us until the roads were dried up. Labor, too, at that season of the year was very abundant and we were able to collect without difficulty selected men at a daily wage 25 per cent. lower than that which prevailed later in the season. We can give many specific instances where thousands of dollars were saved by thus taking time by the forelock.

This experience relates only to outside construction, but in the office the results of early decisions were no less apparent. There was plenty of time to discuss with the owner all the various engineering points in connection with the proposed development, to make careful and detailed plans and estimates, undisturbed by that nervous apprehension and dread which an owner always feels when he is endeavoring to rush his work in the face of advancing bad weather—a haste always detrimental to well considered judgment and careful balancing of values.

Later in the season TIME seems to be a greater consideration than ECONOMY, and thousands of dollars are spent to effect that saving in time which is THEN ABSOLUTELY NECESSARY. We have had experience in that direction also during the present season.

Several of our clients delayed during the early spring for reasons which at that time seemed sufficient. The disturbances in the money market had just begun, and there were those who fancied that by waiting a month or two financial conditions would be somewhat better. Others there were who delayed because they considered that their development was not very extensive and there would be plenty of time even if it were begun later, and some were delayed from pure procrastination or inability to definitely decide upon their wants in advance of actual needs.

These various causes were powerful enough to delay much of our construction until about the 1st of August, when we were greatly pressed with work. Plans were asked for immediately. We were obliged to ask our draftsmen to work nights. The owners were in a desperate sweat. It made a hurried condition of affairs in all directions with corresponding loss of efficiency and economy. This situation has been intensified during the latter part of the season. We have not hesitated to urge all our clients to consummate their plans at as early a date as possible because we knew as well as they did that certain work MUST be done. Since it was absolutely necessary that certain dams must be built before cold weather, why not have STARTED early? Instead of which we are building them now.

We are even taking contracts now. We have closed contracts during the month of October which should have been closed last April. In one particular instance the owner delayed to such an extent that we finally advised him not to build his dam at all this year, to his great disappointment, for he was in a position where if he had begun six months earlier, his plant would be in operation and making good earnings all through this winter. As it is he will get no income for another year.

Another piece of work which we began the latter part of September had progressed in November to a point where we were about to turn the river, but the rivers in New England at that time were experiencing the heaviest floods known for many years. It was a particularly unfortunate time to construct coffer dams and the work was only done at increased expense. This is in strong contrast to the condition of the rivers which we turned last July and August when the water was particularly low. It is safe to say that coffer dams built in the late fall or early winter will cost double those built in the early summer. Yet the owners are, perforce, satisfied, because they are in a position where they are absolutely required to have their development completed before freezing weather, and we are completing it.

Common labor late in the season is difficult to procure and almost impossible to select. The daily wage paid in this country during the past season has been so high that the common Italian has a very comfortable bank account. There is a great deal of work finishing up at the present time, but do these men go from one piece of work finished to another about to begin? Not at all! They pocket their savings, buy a ticket to Italy, take the next steamer home and live comfortably through the winter on macaroni and olives, and return to this country early next spring.

Now these various delays and all expenses incident thereto are not our fault. We continually warn against them and we urge the public to benefit by our experience. The advice is worth thousands and does not cost you one cent. It is entirely for YOUR benefit—not ours. We probably get more out of late season work because all costs are higher, our estimates are higher and our commissions correspondingly increased. This is a benefit to us so far as the treasury is momentarily concerned, but in the long run it is an inevitable detriment to our business when we cannot effect economies for our clients. We are better satisfied to do more work at less commission and have our customers satisfied, than to collect an increased commission on more expensive work even though the fault is not ours. We are able to effect economy in our peculiar style of construction greater than is possible by any other design. We know whereof we speak because we are DOING it. There is no masonry dam that can be built as quickly, as economically, in which the water of the river can be handled as well, and in which construction risk is so reduced, as the reinforced-concrete dam with all the adjuncts peculiar to it. We, therefore, once more come before you to say that our last season's experience has doubled our emphasis that the time to place your contract is NOW. So as before:—DON'T MAKE PLANS OVERNIGHT AND EXPECT TO EXECUTE THEM THE NEXT DAY. DESIGN CAREFULLY. Construction CAN be rushed but well matured designs CANNOT—and they are the foundation of your economies. TO-DAY is the accepted time. Think it over.

AMBURSEN HYDRAULIC CONSTRUCTION COMPANY

ENGINEER-CONSTRUCTORS

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Concrete Construction That Can't Fail

Reinforced concrete construction never fails except when the reinforcement is insufficient or carelessly installed. This has been proven by most careful investigation. "Steelcrete" Expanded Metal is scientifically designed to prevent the possibility of failure through carelessness or from any cause. No matter what your *specifications* may be, Steelcrete will exactly meet them, giving the exact tensile strength and the proper and even distribution of stresses necessary to absolute safety. It is capable of withstanding any inside or outside pressures specified and in most cases a load over the rating required.

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EXPANDED METAL

"STEELCRETE" is the original Expanded Metal reinforcement. The market is full of imitators and pirates. A concern which makes a piratical imitation of an established concern's legitimate product is a dangerous one to deal with. "Imitation is sincerest flattery," but piracy represents a dangerous spirit.

Send for illustrated catalog — a practical treatise on reinforced concrete construction. Free to contractors and builders.

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Twisted Steel Bars
For Reinforcing Concrete

Sizes 5-16 to 1 1-4 in.
Superior elasticity: **maximum strength with less steel—economy.** **Immediate shipment** from reserve stock at our mill. (Bars cut to length—no extra charge.)

Continuous Bond
In no other form of concrete reinforcing is the union between steel and concrete so intimate and tenacious (absolutely continuous—without a break.)
Post yourself about it now—write us for the whys.
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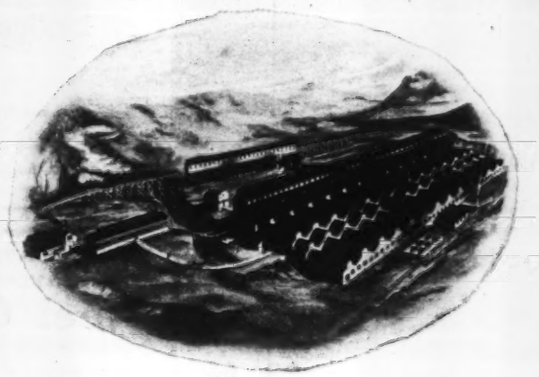

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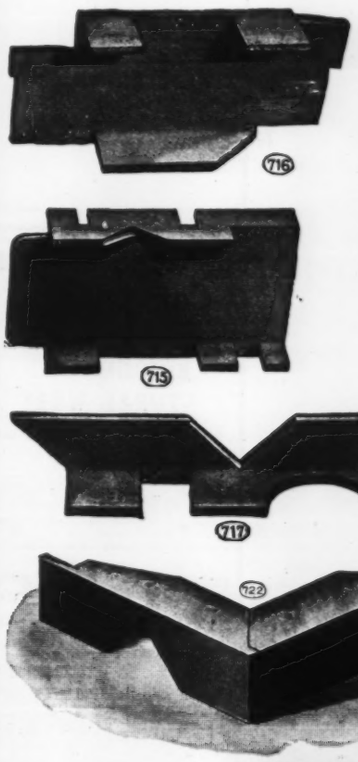

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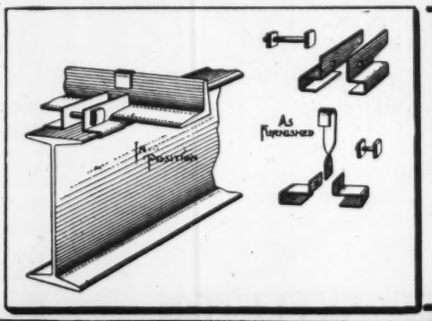

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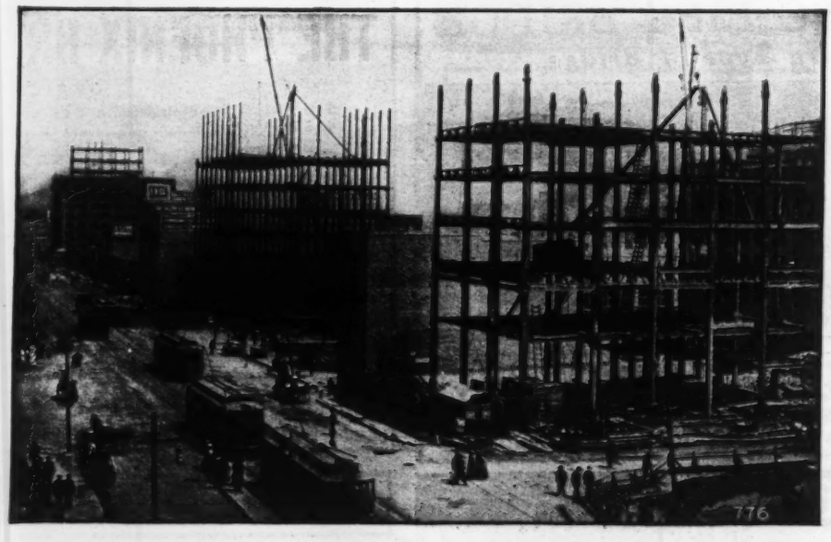

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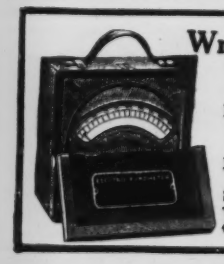

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